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RECENT ARCHÆOLOGICAL RESEARCH.

No. IV.—GREEK ARCHÆOLOGY IN MODERN TIMES.

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IT is now rather more than a century since the father of archæology issued his great work, and still his countrymen celebrate each ninth of December with an enthusiasm which most of us, perhaps, can hardly understand in connection with the birthday of a private individual. Winckelmann is justly credited with having opened up for the world of science a new sphere of activity, and Greek archæology is even now moving on the broad lines laid down by his master mind. We in England, though Englishmen were the first nation who took up seriously the study of Greek art, have hardly even yet, with our conservative tendencies, learnt to regard this study on the level of an exact science. Some of us take the standpoint of regarding it as a useful adjunct to illustrate, and even very occasionally to explain, the classics. Others, while professedly they pursue this study for itself, are apt to take too much the narrow view; dazzled with the glories of the Periklean age, they take the little world of Hellas for the universe of Art, and are blind to the significance of its relations with that larger world, the

art-history of all time. They regard Greek art as a phenomenon of the last few centuries before our era, a lightning-flash which burnt for an instant and was gone; it kindled a fire indeed which shines forth among men for ever, but whence it came and whither it goeth they care not a whit.

The larger view of Greek archæology is the view neither of the specialist nor of the dilettante; it is that in which the object aimed at is equally indeed the search after truth, but on a larger horizon: to study Greek art and life from without as well as from within; to seek for the great principles which underlie perfection, and to neglect nothing which may contribute a link in the long chain of evidence, whether it be the potsherd of a Pueblo Indian or the weapon of a South Sea Islander; in short, to place Greek art in its true position among the nations; and we may be sure that thus it will not lose, but rather gain infinitely, by the association.

In the century that has passed away this point of view has been gradually but surely making itself clear; but it is principally within the last ten years that anything like a full supply of material has been made available. It is the object of the present paper to try and show wherein the past decade has been an epoch-making period, to define our present standpoint, and in some measure to cast a horoscope of investigation for the future.

From this point of view, the part of Greek archæology which must specially attract our attention is precisely that which leaves off where contemporary Greek written record begins. In tracing the origins of Greek art and literature we are necessarily following up the origin of the national life and spirit, and for this our only material lies in the traditions and actual remains of the people, and especially in the comparison with those of other nations. The problems which must confront us are manifold, and the difficulties many: not the least of the difficulties at present is the uncertainty of ancient chronology and the insufficiency of ascertained dates, not merely of one nation of antiquity, but of all. The whole structure of ancient art history is at present more or less hypothetical; the waters of science are flowing, sometimes backward, but mainly forward. A great German writer has compared research to the rising waters of a lake, of which the theories advanced are like the threads of water, ever pushing forward; sometimes the ground they cover reappears again in the backward flow, but more often the advance guard is followed up by the main body of the flood. If the backward flow is sometimes the more apparent, we may at least console ourselves with the famous choice of Lessing: "Pure

truth, O Lord, is for Thee alone; give me the search for truth, and I will be content with that."

It has been said that Winckelmann was the founder of a new science. In order to realise this, let us see for a moment what was the condition of public taste and individual knowledge as to ancient works of art before he appeared on the scene. The literature of Greece had, it is true, found its way with the spread of printing to all the great seats of learning and education by the eighteenth century; and the great Italian cities had their living remains of antiquity, which had either been saved from the wreck of centuries, or were then being slowly recovered from the soil. Young Englishmen of fashion must needs do the grand tour for themselves, in order to finish their education; most of them came back with a romantic dilettante sort of esteem for ancient art, which at the best taught them to admire a "monstrous fine statue" when they saw or thought they saw one; their enthusiasm found expression in one of two ways: either they wrote a diary, in which, sitting on the Akropolis, they would moralise on the past, or they acquired a taste for possessing a gallery of sculpture for their castle in the shire, or mansion in Mayfair. Michaelis' work gives an excellent account of these private collections as they are to-day; and the preface tells us how they were formed, chiefly through the skilled medium of the Nollekens, the Jenkins, or other dealer of the day. A glance at Michaelis' book will give a very fair idea of what the materials were on which Winckelmann had to work, for the private English collections of the eighteenth century probably represent a fair estimate of what the Italian museums contained when he was working among them. They were, in fact, for the most part, works of varying merit of the Græco-Roman period; that is to say, copies made to order for the decoration of the villa of the patrician Roman of antiquity. In the general ignorance of style there lay a grand opportunity for the restorer's fancy; and the Cavaceppi of that day acquired then a dangerous skill, which their descendants of to-day have never wholly lost, unfortunately for us. Of Greek work, pure and simple, little or nothing was known. In the fifteenth century, Ciriaco, the mediæval Pausanias of Ancona, had studied the relics of Greek art, when Greece was under Italian princes; and in 1675 Spon and Wheler made their journey to Greece and the Levant, an exploration in a country at that time almost unknown. Under Turkish rule, however, the task had become more and more difficult. Such collections as were made were, like that of Lord Arundel, practically

inaccessible to the German scholar; probably, as "President of Antiquities" in Rome, he had not much sympathy with the "charcoal souls", as he called them, of many of the British travellers in search of antiquities. The first of them who brought home rich booty from Greece itself was Sir Richard Worsley (1751-1805), but his *Museum Worsleyanum* was not published till 1798. The travels of Dodwell (1767-1832), Gell (1777-1836), and Leake (1777-1860) were not yet; it was only in the beginning of this century that the French tenure of Italy having made that country difficult for English travellers, their attention was turned to Greece; while simultaneously the brilliant genius of Porson had given a strong Greek bent to the study of ancient literature in our own country. As an evidence of the condition of taste in ancient art in England, we have Payne Knight's introduction to the *Specimens of Ancient Sculpture* (1809), purporting to be "a glance over the development of ancient art". It was written by a man who led the opposition to Lord Elgin, which nearly lost us the Parthenon marbles: "You have lost your labour, my Lord Elgin; your marbles are over-rated; they are not Greek, they are Roman of the time of Hadrian."

Under such circumstances as these, it is all the more remarkable that out of his scanty and ill-assorted materials Winckelmann should have been able to refine the few grains of the true gold that he was seeking, to formulate certain broad laws of style, and to mark out, as it were, the ground-plan upon which the great structure of our modern knowledge of Greek art has been raised. His great work, which traces in a universal aspect the spread of art from nation to nation, treats of the art of the Egyptians, Phœnicians, and Persians: from the Egyptians it passed to the Etruscans, and thence to the Greeks; but throughout we are made to feel that the other nations are but a setting, as it were, for the central brilliancy of Greece. For the first time Greek art had been intimately comprehended as an actual organic creation, and accurately tested in its national and historical relations.

As the first consequence of Winckelmann's work, his successors confined their attention to histories of Greek art alone. Meyer's work (in 1823), a *History of Greek Art, from the commencement to the highest bloom*, is an enlargement of this part of Winckelmann's subject, based upon the same lines. Hirt (1833), in a similar work, notes that Greek literature gives us artists' names only from the seventh century B.C. downwards. He therefore concludes for the complete dependence of the art of Greece on that of Egypt, which

had been newly opened up to the Greeks in the seventh century by Psammetichus. Thiersch's work, which came soon after, is valuable as being the first which called attention to the importance of the so-called "Hero time" in Greece; appreciating the importance of the works of art described in the *Epos*, he sets the commencement of Greek art at five centuries earlier than his predecessor. During these five centuries art was in a crystallised, lifeless condition, to account for which he assumes hieratic influence of a similar tendency to that which is observed in Egyptian art. K. O. Müller made an important stride in his *Handbook of Archæology*, in which the peoples of the East are relegated to the position of being a mere "Anhang" to the Greeks. Like Thiersch, he goes back to the early date for his beginning of art; but whereas Thiersch had relied on literature only, Müller uses as his most weighty argument the evidence of the actual monuments; for him the remains of Tiryns, Mykenæ, and Orchomenos are remains of Greek culture dating from the end of the second thousand years B.C. The gulf between this advanced date and the bloom of art is explained from a point of view which we now see to be in some measure the right one: in the period before the seventh century B.C., art as an independent activity, represented by names of known artists, did not yet exist; its place was filled by an extensive circulation of art craft and art handiwork, which from the conditions of the case were less subject to broad laws of development.

In all these histories of art there is one main point, which at once strikes the reader; each of the authors feels the importance of it, and each offers a different solution: the problem is that of the beginnings of Greek art before the the seventh century. Winckelmann had taken the process of its first development as that of a germ passed geographically from the Egyptians to the Etruscans, and so on to Greece; his mistake lay in overrating the influence of the Etruscans, a mistake which was, after all, perfectly natural to expect, when we remember that almost all the considerable finds of early art closely allied to Greek had in his time been made in Etruria, and all those vases, for instance, which we now know as Greek, were then considered as Etruscan. But when once the principle was established that the earliest recorded art of Greece was the outcome of centuries of events which to the Greeks themselves were wrapped in obscurity, this mysterious past was the problem which was at once the most interesting and the most difficult. It was most difficult, in the utter absence of all authentic literary records, and the comparative paucity of monuments which

could, like the walls of Tiryns "which the Cyclopes built for king Proitos", be with certainty referred to this mythical past.

Meanwhile, however, much was happening which was destined to influence and to widen the range of archæology: a new and more extensive field was opening in the East; the re-discovery of Egypt by the French expedition under Bonaparte was shortly followed by the opening up of the buried cities of Mesopotamia; and as day after day new monuments were multiplying, and the methods of reading their secrets were becoming more certain, knowledge gradually accumulated about those Empires which were already hoary in the ages before Greek art, as then known, was yet in its infancy. During the long peace which followed the great wars of the Empire, the barriers were removed which had confined research to the individual and isolated effort of one nation or another; science was finding a wider and more cosmopolitan footing; and from this time forward there was inaugurated a busy period of toil in every direction; travellers and artists, savants and philologists, have ever since worked in concert: Champollion found the key to the hieroglyphics, which gave meaning and historical value to the flood of Egyptian monuments which have ever since been ceaselessly pouring in; the Mesopotamian kingdoms of Tigris and Euphrates, known hitherto only in the names of a few stray kings, were thrown open by Botta and Layard, and revealed in marvellous completeness and preservation: while their inscriptions did not long withhold their secrets. Out of this mass of material we are only now gradually gaining a definite system of order and arrangement: much still remains to be done before we can be in a position to do more than trace in a general way the broad lines of their development.

This much at any rate was certain: that in primitive times two main centres of culture had existed: the one in the valley of the Nile, whose monuments went back to the earliest dawn of civilisation; the other, younger, it is true, but still infinitely remote, in Chaldæa; and further, that Syria formed, as it were, the bridge of peoples across which the interchanging ideas and products of these two passed and repassed. For Greek archæology, however, the main point still remained at issue, and, indeed, has only within the last few years been grappled with seriously, and with any likelihood of success. What direction had these Eastern streams of culture followed, and by what medium had they come to the Western shores of the Mediterranean before they influenced the still barbarous tribes, ancestors of the Greeks and Romans?

It was evident that the question was again assuming an interest which involves the universal history of the nations: Winckelmann had urged very strongly, against the claimants for the Egyptian origin of Greek art, the counter-claims of the Phœnicians; the Phœnicians had beyond a doubt communicated to the Greeks the elements of their alphabet, and why not the elements of their art? This idea was by his successors ridden to death, so much so that in 1846 Gerhard found it necessary to publish as a counterblast his *Ueber die Kunst der Phönicier;* in this work due attention was called to the art of Asia Minor, that natural bridge between the peoples of East and West, and of which the explorations of Texier and Fellows were showing that it, too, was rich in monuments which testified to its ancient art and culture. As an outcome of this extended view of art history, Julius Braun published in 1856 his *Geschichte der Kunst in ihrem Entwicklungsgange alle Völker der alten Welt*, but this book was too exclusively a return to the old lines of the "Stammbautheorie", a position which fails to grasp the many complex and involved paths by which the characteristics of one nation with another are communicated and exchanged.

The same geographical order had been followed both by Kugler and by Lubke in their histories of 1841 and 1860, respectively: the former work is otherwise interesting as being the starting point of a new development in art history: the author saw dimly what is now becoming more clear, and endeavoured to give a more extended sphere to the history of art. Winckelmann had been the first to lay down the principle that the art of a nation is born, grows, and decays with the society in which it flourishes, that it has in fact a history: Kugler endeavoured to show the importance of comparative study of it: that it is capable of treatment on the broad level of the world-history of mankind: and so he begins with the so-called "Celtic" monuments, and treats Mexico and Yucatan before he arrives at Egypt. Of these works the scale is too small to admit of a really sufficient treatment: entire antiquity is dismissed in a couple of hundred pages; and the same is true of Schnaase (1842) in a less degree: his first two volumes are devoted to the East and the classic peoples of antiquity; but, after all, the true worth of this book lies in its grasp of mediæval and later art. As far as antiquity alone is concerned, the book which is now being issued is perhaps of all others the most successful, as it is the boldest attempt at a complete history of ancient art: the *Histoire de l'Art dans l'Antiquité*

of MM. Perrot and Chipiez (1882, in progress) takes the history of the nations volume by volume, and may be said to be complete as far as the level of present knowledge goes: the writer has a singular grasp of the various manifestations of the multiple genius of the man of the past: all the various aspects of commercial and artistic, historical and social, are carefully assorted with a lucidity which is well *au courant* with the march of discovery: and yet one feels that the different members of the subject are united in the main idea of the final supremacy of Greece and Rome.

This brief review of the historical literature of art will serve to indicate my point: that the study of Greek archæology has been gradually growing into the wider field which has only in the last few years been fully opening out for it: the gradual development of the last century had prepared it for the series of discoveries which, beginning only little more than ten years ago, have succeeded each other with such extraordinary rapidity, and have thrown such a brilliant light on the dark periods before Greek literary records had commenced. The two great land-marks in the history of the world's culture, as a recent writer has remarked, are the Alexandrian age, and the age which we may in its widest sense call the age of Mykenæ. These two periods are alike in this, that in each for a moment, as it were, East and West had joined hands, united in the same purpose: they were two great tidal waves of time, of which the vibrations have not yet come to an end: both were of the deepest significance for Greek art, for in the one it was born, in the other it completed its course of victory over East and West. The forces which had been individually at work, each in its own sphere, were by an overpowering political agency set moving together, in the first period in a Westerly, in the second in an Easterly direction. In the second thousand years B.C. the moving force was the power of Egypt, just then at its zenith of expansion: when Asia Minor and Hellas were both brought into intimate intercourse with Egypt, both commercially and in connection with their forms of art. The age which followed the conquests of Alexander, significantly described as the Hellenistic or Alexandrian age, has as yet given little but literary remains to the modern times with which it was so much in sympathy. Pergamon and Pompeii have told us something, and from coins and inscriptions much more is gradually being gleaned; archæology is here the chief handmaid of history in its widest sense, that history which deals with mankind in the complexity of his relations, social and religious, as well as political. This is, in fact,

one of the great changes which in more recent times has grown up, and is still growing, in the old order of Greek archæology; true history is not merely the development of institutions and the public affairs of state: it is that which regards society in general as its function, and neglects no aspect, not the humblest surroundings which may illustrate this complex organism.

And in this connection it is interesting to see in what point of view the historians of Greece of our time have regarded archæology. Grote may be said to absolutely ignore it: he had neither the knowledge of it, nor yet that sentiment which alone can place the writer in full sympathy with his subject: to us now it is difficult to imagine anyone writing of the Greeks who has not grasped that inner life which is, after all, mirrored, not in their public documents, not even in their literature, so much as in the terra-cottas and bronzes of their home-life and religion. E. Curtius had indeed this sympathy with his subject, but he had not access to the wealth of material which has grown up since his time: he stands on the point of transition between the old style and the new as represented in Duncker and Holm. Holm's history, which is still in progress, is perhaps the nearest approach to a full use of archæological material for history which has yet been seen; but it is in too small a compass to give an adequate representation of the strides made in modern archæology. And there is another great difficulty which encounters the historian in the swiftly flowing tide of science: it is difficult, no doubt, to keep pace with the onward stream; but surely that is no reason why we should step out of it altogether, as one recent historian has done. Dr. Abbott's history is in this sense a monument of academic conservatism; "The evidence of monuments, unless illustrated or confirmed by written documents, is of small service to the historian"; and again, "Homer is of little or no value as evidence of the early civilisation of Hellas"; and so the remains at Hissarlik, Mykenæ, and Tiryns, the wealth of evidence contained in the early movements of cults and myths, the entire picture of the epos, are all practically discarded as worthless, being unrelated to anything that we know of historical Greece!

What we now are seeing more and more every day is that every scrap of evidence is valuable: the potsherd trodden under foot on a deserted Ægæan islet may be the only remaining indication of a great historical fact: the song sung by a sponge-diver's wife to her child may give us the clue to a lost myth, which in turn is evidence of an early migration of peoples. Primitive customs

and beliefs die hard in a mountainous country; often even the racial character remains the same; we have had an example of this in the recent account of the Austrian expedition to Asia Minor; the second volume of the *Reisen in Sudwestlichen Klein-asien* is in a great measure devoted to Luschau's ethnological comparison of the skulls, according to which the types of the people of Lycia from antiquity to the present day have remained unaltered; the name only has changed. Mr. Bent's papers on Greek myths and folk-lore are evidence of what has been done, and of how much may still remain to do in this direction. As one instance among many, we may quote a curious case in which a modern survival of an ancient custom has served to explain a much disputed passage in Greek literature. In the *Classical Review* for 1888, p. 180, Mr. W. R. Paton refers to the passage in Pindar, *Isthm.* ii, 10, in which the phrase *ἀργυρωθεῖσαι πρόσωπα* has never been satisfactorily explained. "Terpsichore had not to silver the faces of her songs in order to find buyers"; Pindar spoke of the *ἀοιδαί* as persons ("songs" here = singers), and it was difficult to conceive how gilding the faces of singers could have made them more attractive. Mr. Paton explains it by a custom which is still prevalent in Greece: "At the open-air festivals the musician stands in the centre of the circle of dancers; only silver coins—no paper or copper—may be given him in payment of his services. When he receives them he does not put them by, but sticks them on his face, no doubt *in order to attract further contributions.* The exertions by which he has earned them ensure their adhesion, if the weather also be fairly warm." On p. 261, *ibid.*, Mr. Fraser calls attention to the analogous instances of this custom in Lucian, *Philopseudes*, 20, and as recorded in Newton's *Travels*, ii, p. 4, who saw in Lesbos a gold coin stuck on the face of the Panagia, and was told that it was a native offering for recovery from sickness; also, to go farther afield, the spinning festival in the distant island of Celebes, at which a man places a silver coin on the brow of a girl who pleases him: if the coin is not returned, he knows that his suit is accepted.

It is surely an obvious fact that the true historian must needs neglect nothing which will enable him to explore the deeper currents which underlie the political forces which it is his duty to chronicle; and this is nowhere more true than in the case of Greece. What, for instance, is Greek history but dry bones without her poetry, her religion, and her arts? It is not surprising that a writer like Dr. Abbott should find the significance of the Olympic

games "incredible, if it were not true". We should have thought it "incredible" that in our own days so determined a sceptic could still be found.

In this sense archæology is the handmaid of history in its widest form; and now that the different branches of archæological material are being every day more methodically and compactly grouped by the specialists there is no excuse for neglecting the use of them. It may be said that sculpture requires a special training and demands a history of its own; we have the histories of sculpture of Overbech and Murray, which supply in the fullest degree all that is necessary; while for the other branches of archæology we have books on vases, terra-cottas, coins, bronzes, and epigraphy by the score. For the past ten years has not only seen an extraordinary increase in the supply of fresh material, but it has brought about a cosmopolitan organisation which is the only final method: photographs, casts, and squeezes, being easy of communication, have rendered this possible; in the Δελτίον of the Greeks, the Italian *Notizie dei Scavi*, and in numerous notes in periodical literature we have the chronicles of new finds collected and arranged: and in the Berlin *Jahrbuch*, an admirable quarterly bibliography which seems to omit nothing. The tendency of to-day is towards a general classification of material wherever found; and the great corpus of inscriptions of Berlin for one branch, and Brunn's *Denkmäler* for another, are leading signs of this tendency.

It is not my purpose here to call attention so much to the discoveries which have so largely increased our knowledge of the historic Greeks within recent years; it is sufficient merely to mention the names of Olympia, Pergamon, Nunkratis, and, most recent of all, the diggings on the Akropolis, which have resulted in giving us so rich a picture of Athens under the Peisistratidæ. It is a sign of the times that the two official archæological publications of Athens, the Δελτίον and the Ἐφημερίς, are on a level with the best European work, both as judged from an artistic and a literary point of view. It is rather in the revelations of the prehistoric ages that our past ten years have been a real awakening.

The subject of the earliest dawn of art in Greece is one that involves problems for the ethnologist and philologist as well as the student of archæology. We cannot believe with Duncker that the Pelasgi, Achæans, and Hellenes are merely names which indicate three stages in the development of one Hellenic people. Philology teaches us that their language contains elements which must have been at one time grafted upon it from an external

source: anthropology teaches us to recognise the elements of a barbarous past; and if we examine the earliest traces of art and handicraft, we shall find an analogous process obtaining there also. Though we cannot believe that Greek art was a spontaneous outgrowth of the Ægean archipelago, we have reasonable hope at least of tracing the antecedents of the individual originality of the Greek genius: we may cheerfully recognise to the full the indebtedness of the Greeks to the Orient in cult and language, type and technique, and still find room to wonder at that inborn genius which graced everything that it touched.

The extant literary records of the Greek nation do not take us farther back than about the middle of the eighth century B.C.; in venturing into the dark ages before this period we have for our guidance only the traditions handed down by the Herodoti and Diodori of their history, the poems of Homer, and such evidence as is afforded by comparative history and philology, and by the antiquities themselves—the cradle-clothes, incunabula, of Greek art.

As regards the Greek historians, our own information is probably far wider, as our historical faculty is better developed, than theirs could be with its more limited range. We have learned to trust the evidence of mythology on certain broad lines which stand out through the network of beliefs to which the divisions of the Greek peoples into tribes and demes gave rise: and while we avoid the hopeless slough into which the "solar" heresy of Welcker and his school would lead us, we recognise the usefulness of this class of evidence when confirmed from other sources; that, for instance, the legendary contest of Athenaia and Poseidon at Athens dimly veils an historical truth in the contest of two races, of which the incoming race first overcame and finally absorbed the other. On this judicial aspect Holm's history takes its stand, and gives us an analysis of this form of evidence which is really excellent. The logographi and genealogists who give us the traditions in their earliest forms belong principally to a time when the idea of Hellas as a corporate whole was a moving cause, and when oral, and as yet unwritten, tradition was at work diluting more and more the real facts. From this, then, the principal result which we obtain is an occasional sidelight on the spirit of the times which they represent, and a record, more or less faithful, of the early movements and settlements of people.

In this sense the poems of Homer are of the greatest value, independently of the question of their unity or of their date in the present shape: poetry, with laws of form which tend to preserve it

from alteration, is not subject to the influences which affect the ordinary oral tradition, and thus we have in Homer a simple reflection of the national spirit of an age which is centuries more remote than the introduction of writing: we must always, however, bear in mind that the poet is imaginative both in his choice of ideas and in his language, and that we must therefore not expect with Schliemann to find an actual shield of Achilles or a head-dress of Helen.

If we examine, then, what the Greeks have told us concerning their earliest origin, it amounts briefly to this. We have an original stock represented by the legends connected with the name Pelasgi, a simple agricultural folk who have no god but Zeus; living, perhaps, as the story of the Leleges tells us, in communication with the coasts of Asia Minor from a remote period, and in point of origin connected by means of Thessaly with the Italiot races. As time goes on, modification takes place in two directions, by sea and by land. The natural formation of these countries suggests what in fact seems actually to have happened: on the one hand we have a country inland which is split up by mountainous tracts which make communication difficult: on the other hand we have an excellent seaboard, with chains of small islands forming the stepping-stones for the rudimentary navigators who would pass to and from Asia. And so, whereas the inland development seems to have taken place in a series of regular intervals, the peoples of the North pressing every now and again in great rushes Southward: from the sea on the other hand there came the successive powers, represented perhaps under the shadowy pictures of the "Karians", "Minos", and "Agamemnon".

Throughout the mass of legend and myth which encounters us, it seems clear that the cradle of Hellenic civilisation was really Asiatic. That is to say, while the coasts of Asia Minor were inhabited by the elements of the Hellenic race at least as early as Hellas itself, the earliest traces of culture are attributable to the Asiatic Greeks. Among all the theories propounded for the direction from which the Greek people first came, this much seems certain: that a great branch of an Aryan origin spread downwards from the north-east along the basin of the Ægæan at a time when, as the comparative philology and religions of the Italiot and Greek races (the latest members of the great Aryan family to separate) show, they were by no means an entirely rude people. A further movement took place by sea also from the East. Under these circumstances it is natural that we should look to the early nations of

Asia Minor who border on the Ægæan coast. At present our knowledge of these nations is very incomplete: it is only within quite recent times that a more extended and systematic study of these border lands of early culture has been attempted. Much has been done in recent years to throw light upon these seats of early dynasties, the kingdoms of Priam and of Tantalos, Lydia with its semi-Semitic population, Phrygia with its wealth of Aryan monuments: and it is in this direction that we have much cause for hope in future investigation.

Within the last ten years Professor Ramsay has made a special study of the antiquities of Phrygia, and has made a series of journeys through the country. The main results of his inquiry, as far as they concern the early history, are summed up in a recent paper in the *Hellenic Journal*, 1888, p. 350. The chief points which he claims to have established are as follows:

I. The Phrygian and Karian races are kindred tribes, closely allied in origin, and in the analogy of their art history, to the Greeks.

II. They came into Asia Minor across the Hellespont, and established themselves by right of conquest in the countries which bear their name.

III. The conquered race belonged to a stock which had spread over parts of Greece and Italy, as well as Asia Minor, and which has been traced by Pauli (*Eine vorgriechische Inschrift aus Lemnos*) through the use of local names ending in *-nda* and *sa*. "Its social system knew no true marriage, and traced descent through the mother: and in correspondence with this system they acknowledged a mother goddess and her son. The conquerors introduced the worship of a supreme God, the Father (Papas), and the Thunderer (Bronton). The two religions were amalgamated variously in the different parts of the country."

IV. A similar conquering caste of the same Phrygian stock had established itself in Lydia and Lycia, where the different surroundings tended to widen the breach.

V. The close relation with the Greeks of Cyme and Phocæa in the eighth century brought them in relation with the kings of Argos, which in Greece at that period was the most powerful state; and the Phrygian device of the Lion Gate of Mykenæ belongs to this period, 800-700 B.C.

In the general ignorance of early Greek art it is natural that an absorbing interest should attach to those sites which were connected by tradition with Homeric times; and Schliemann's dis-

coveries at Hissarlik, Mykenæ, and Tiryns were the first, as they must remain the most important, of all the discoveries which have followed them. Now that the first excitement of these events has passed, and now that they are no longer regarded as unique phenomena with which all history had nothing to compare, we are able in some measure to classify and arrange the results which they have taught us. Much of this is due to the observation that the remains of ancient culture lie as in a geological system, strata-like, one upon the other. This is specially the case in the 53 feet of *débris* at Hissarlik, even if we do not with Schliemann go so far as to differentiate the remains of seven distinct settlements which had successively replaced one another on this site. It is obvious that in a case like this the lowest stratum must be the earliest in point of time. From the lowest strata at Hissarlik have come the remains of a civilisation which to all appearance is the most primitive which has as yet been met with in Hellas or Italy: the pottery is here hand-made, the tools are of stone, principally obsidian, and the use of metals is only known in a very limited degree. Though there is no trace as yet of foreign importations, this population seems to have extended over a considerable area, from the Troad to Cyprus at any rate, but specially over the islands which adjoin the coast of Caria: the researches of Bent, Paton, and others in the Cyclades have produced results which prove so strong a similarity in the methods of burial and the character of the objects found, that there is little doubt that we see in them and in the earliest remains at Hissarlik the traces of one homogeneous civilisation: the pottery, though similar in type throughout, has certain local differences: we have therefore the existence established, in remote pre-Phœnician times, of a race united in customs and origin, who not only held a footing on both sides of the Archipelago, but established prosperous native industries where they had set foot.

The most developed of this class of antiquities are a series which were found under a stratum of lava in the island of Thera: this stratum was the result of an earthquake which is not recorded in history, but of which geologists fix the date at about 2000 years B.C. Now these Thera objects come as an intermediate stage of development between the periods of Hissarlik and of Mykenæ: they show the introduction in the pottery of ornament painted in a dull colour, in the place of ornament which had been hitherto moulded or incised. It is precisely this kind of pottery which is found in the lowest strata of the Mykenæ period.

We may therefore assume that, broadly speaking, these three sites, Hissarlik, Thera, Mykenæ, mark a corresponding chronological development: the date which we assign to the earliest must mainly depend on that which we obtain for the earliest Mykenæan objects.

In the Mykenæan sites, *i.e.*, Tiryns, Mykenæ, Orchomenos, Ialysos, etc., we have evidence of a long period of development, of which the pottery gives us the most instructive, as it is the fullest, material. The authors of *Mykenische Vasen* find that this pottery may be divided into two main groups: class A, the earlier, with ornament painted in dull colour; and class B, where the decoration is executed in a varnish or glazed colour. Now this shining varnish is the peculiar characteristic of Hellenic pottery alone, and of those dependent on it; whereas class A is met with in Egypt, Assyria, Moab, and other parts of the East. A similar distinction is traced in the character of the gold ornaments of Mykenæ, of which some have a decidedly Orientalizing style. The conclusion is, that in the earlier pottery and gold work we have the remains of a settlement of Orientalizing colonists, possibly Phœnicians.

In the architecture of Mykenæ we have valuable evidence, which seems so far to point in two directions. First of all there is the Phrygian influence, which has been already referred to, as exhibited in the heraldic device on the Lion Gate and in the "beehive" graves: these beehive graves, which as yet in a strict sense have only been found on Greek soil, reflect a system which, as Professor Adler has proved, was evolved out of the style of Phrygian architecture by a long process of evolution which extended over a large area. Although no beehive graves have as yet been found in Asia Minor, the elements are there, and came to Greece from thence, possibly with the immigration of rich Phrygian families, "such as we see reflected in the myth of Pelops, who came from the Hermos valley."

On the other hand, we have strong traces of Egyptian influence: the chiselled ceiling of Mykenæan Orchomenos gives us a pattern which is identical with that of a Theban tomb: the system of construction by a mixture of wooden tie-beams with the stone, as seen at Tiryns, is undoubtedly of Egyptian origin: and in the minor antiquities there is much which is identical with the arts and products of Egypt. Sometimes these are purely imported; but in some we seem to trace the influence of a hand which is certainly not Oriental, but which might well contain the germ of what we know as Greek. Chief among this class of Mykenæan antiquities is the peculiar fabric of the bronze inlaid swords. Of these swords,

which are ornamented with designs inlaid in gold and other metals, eight were found at Mykenæ and one at Thera. One typical scene among them is that of a river with fish, the papyrus nodding in the waters, and panther-like animals pursuing ducks along its banks. This is evidently a scene suggested by the Nile, but it is very different in spirit and composition from any Egyptian representation of that river: we seem to see a dramatic spirit and a feeling for composition and spirited drawing which was essentially the heritage of the Hellenic race. In that case, how comes it that a sword of exactly analogous fabric has been found in a tomb at Thebes? Brugsch, in *Egypt under the Pharaohs*, i, p. 253, describes the finding of the tomb of Queen Aahotep, who dates from the sixteenth century B.C. Her coffin was found by some Theban agriculturists in the ancient necropolis of No, and the contents are now in the Boulak museum. It was buried, not in a subterranean chamber, but in the earth itself, at a depth of one mètre. The cover of the coffin had the shape of a mummy and was gilt: here we have possibly an analogy to the system of burial, and to the gold masks in the pit graves at Mykenæ. Between the linen coverings of the body were a great number of objects in gold: daggers, a gold axe, a chain with three large gold bees, a *breastplate* in gold, two little ships in gold and silver, besides numerous other articles in gold and bronze, on some of which are stamped the cartouche of Aahmes, which leaves the date beyond a doubt. One of these poignards is furnished with a handle decorated with a series of triangles of gold, lapis, cornelian, and felspar, surmounted by a pommel formed by four heads of women in repoussé gold plate: the handle is thus precisely analogous to the one figured in *Mycenæ*, p. 267, and terminates in the same way. The blade is of gold, traversed by a band of sombre metal on which are various devices, encrusted by a process of damascening. In the same tomb were found gold earrings with filagree decorations in spirals which recall the style of the spiral ornaments of Mykenæ, and some gold and silver moths or flies which recall the butterflies of Mykenæan art. It will thus be seen that the whole system of burial in the pit graves at Mykenæ is analogous to a system of which the only other notable example as yet found outside Greece existed in Egypt in the sixteenth century B.C.

In the tombs at Ialysos which are of Mykenæan time was found a scarab of Amenophis III, which of itself, of course, proves nothing, as scarabs were frequently in use for centuries after the date which they seem to bear; but it becomes valuable in con-

nection with the other evidence, which points to early in the second thousand years B.C. for the date of the Mykenæ period. The name of Amenophis III is a significant one, for the recent find of cuneiform tablets at Tel-el-Amarna has shown how extended was the influence of this king in Asia: in these letters addressed by the distant Asiatic peoples to the "King of their Lords", we see how anxious they were to ingratiate themselves with this powerful potentate, who had even married the daughter of one of their own kings, Dushratta, the king of Mitani. Of these tablets Winckler has made a report in the *Philologische Wochenschrift*, 1889, pp. 455 and 609: from which it would seem that much light may be thrown by them upon the early languages of Asia Minor, as well as on the earliest original records of Phœnicia and Palestine.

There is yet one more link which has lately been forthcoming: in the *Academy* of March 16, 1889, Mr. Petrie announces a discovery which he has made at Tell Gurob: in this town, of which the history dates only between the reigns of Khuenates and Ramses II, he claims to have found pieces of pottery which are certainly un-Egyptian, and which are apparently of Mykenæan fabric. If this be proved, we have here an inland town of Egypt containing pottery of the 15th century, which seems to be Hellenic.

It is evident, then, that our attention is being more and more attracted to the importance of that epoch which includes the early centuries of the second thousand years B.C. In this connection we may note a new departure in history which a young German writer has recently initiated. Von Sybel proposes to write a *Weltgeschichte*, that is to say, a history of ancient art according to its epochs: wherein the materials of history, ethnography, and archæology are to be grouped according to periods of time, in order that the universal laws of development and exchange may be comprehensively arranged, and where the system depends upon time rather than upon place. Such a scheme as this can obviously be attempted only at a very advanced stage of our knowledge in the various subjects which it involves. Meanwhile, there is much which still remains to be done. Space does not allow me to do more than merely to touch upon the more pressing of these problems. Quite recently the find of prehistoric bronzes in the cave of Mount Ida, in Krete, has shown us how much may be expected from systematic research in that island, lying as it does at the point of intersection of all the Western sea routes, and of which, as Hoeck said, "the period of prosperity belongs to so ancient

an age, that it was already fallen before the rest of Greece began to flourish."

The finds of Hallstadt and of Vettersfeld, the questions which centre around the trade routes by which amber can have come from the Baltic shores to Mykenæ, are problems which are of the deepest significance for the relations of Northern European culture in the Bronze age and later. The amber question has been well discussed in Deecke's edition of Müller's *Etrusker*, i, p. 264: while Montelius more recently has shown that materials for the same question are being collected in the North.

If the time is not yet come for a *Weltgeschichte* like that of Von Sybel, it is evident at any rate that Greek archæology is tending in that direction. It is so far a sign of the times that the newly elected Professor of Archæology at University College (Dr. R. S. Poole) has recently inaugurated his course of teaching with a series of lectures by Prof. Boyd Dawkins on "Primitive Man".

CECIL SMITH.

THE IDENTIFICATION OF ANCIENT AND MODERN WEIGHTS, AND THE ORIGIN OF "GRAINS".[1]

IN the last paper in vol. i of *Domesday Studies*, being the paper written by me, I have shown how the *same* ancient square Stadium (answering to our modern quarantene) divided by different rods containing different numbers of feet, would give differently-sized acres, the sum total of which, however, would of course amount to the total area contained in the square Stadium, and I suggested that if known positive weights of metal, etc., were divided in the same way, the result would be that the divisions of the weights would in many cases correspond with the divisions of the Stadia into acres, etc. At pages 241 *et seq.* of that volume, and more particularly at p. 248, I show how an entry in *Domesday Book* itself, at fol. 269*b*, in regard to the lands "inter Ripam" being the *locus in quo* of the Cheshire acre of 6 × 60 sexdecimal rods of 16 feet, bears evidence of that fact. In it the Stadia or quarantenes are divided with a sexdecimal rod of 16 feet, and the pound itself is shown as divided sexdecimally into 16 solidi of 16 denarii, as well as into 12 solidi or ounces of 20 denarii, giving, however, in their *totals* exactly the same results (see *post*). I propose now to go somewhat deeper into the matter in regard to the weights; but as I go further back than the introduction of money, *i.e.*, stamped metal, I do not intend to go into the relative value of gold and silver, or of one country with another, but I have confined myself to weight, and merely remark that in some countries they have one weight for gold or silver and another weight for merchandise, and in other countries the same weight does duty for all three.

It is well known that in classical times in Asia, measurements were made by *original* Stadia of six hundred feet (*i.e.*, 400 sesquipedales cubits), whatever the foot might be, this representing 60 decempedal rods. The whole Eastern system was founded on the basis of six into ten, but in after times (and it may be even at the same time) an original square Stadium of 600 × 600 was divided

[1] NOTE.—A Troy grain, or half-chalcus, is .064792 gramme. A gramme is 15.4340 Troy grains.

(without altering the total positive measurements, and instead of 60 × 600 ten times repeated) into 64 × 640 or 72 × 720 or 80 × 800 or 84 × 840 or 95 × 960, that is, into duodecimal or sexdecimal divisions (4 × 16, 5 × 16, 6 × 16, etc., or 5 × 12, 6 × 12, 8 × 12, etc.) without increasing the actual area measured, the alteration being really in the size of the foot, the 4 of 15 in the sixty equalling and answering to the 4 of 16 feet of one-sixteenth less than the original foot, or, in other words, the rod of 15 feet of the one answering to the respective rods of the others, as shown at p. 255 of my paper referred to.

The chief weight among the Asiatics was the "Talent" or "total", and as they divided the Stadium, whatever the length of it might be, thus 40 × 10 cubits, 60 × 10 feet, so did they divide the talent, whatever its positive weight might be (and there were many talents), into 60 minæ of 100 drachmæ each, of 6 obols of 8 chalci, and the following arrangement will show the divisions so made:

1 Talent = 480,000 chalci or 10,000 drachmæ, each of 48 chalci.
= 60 minæ each of 100 (larger, but called by me "original") drachmæ.
= 6,000 drachmæ of 48 chalci.
= 36,000 obols of 8 chalci to obol.
= 18,000 dioboli of 16 chalci.
= 288,000 chalci.

Such was the original division of a talent in ancient times in certain parts of Asia. But perhaps at the same time, and certainly in after (but still ancient) times, these original talents were divided just as the Stadia were divided (instead of into 60) into 64, 75, 80, 84, and 96 minæ, and each of such minæ, if multiplied by *sixty*, would then be the foundation of another talent smaller than the original talent; thus, as we shall see, the Troy talent of 37,320 grammes, or 576,000 Troy grains, divided by 64 and the quotient multiplied by 60, gives the Tower talent of 34,987 grammes, or 540,000 Troy, so the Tower talent of 34,987 grammes divided by 64 gives the Asiatic talent of 32,744 grammes, or 505,300 Troy, the hundredth part of which is the Roman pound. So the Eginetan talent of 37,320 grammes, or 576,000 Troy, *i.e.*, 100 Troy pounds divided by 75, gives the Babylonish of 497.6, thirty of which give 14,928 grammes, or the weight of one of the Babylonish stone ducks, or 480 ounces of the Troy pound, and so on.

We have distinct evidence of this in the statement of Plutarch (15), that Solon lowered the ancient weight by one-fourth. This he would have done by taking the new talent at 75 of the *original* drachma; in other words, as the *original* talent consisted of 60 × 100

or 6,000 original drachmæ, it would consist of 80 ($\frac{6000}{75}$) of the new minæ (see *post*, forms Nos. 4, 5, 11, and 12, and notes thereto); but as we have seen above that a mina was 100 drachmæ, the *original* talent would consist also of (as well as of 288,000 *original* chalci) 80 × 100 × 48, or 384,000 chalci, each, however, reduced one-fourth in size. Carrying on this investigation a step further, it will be observed that every one of these ancient talents was a centum-pondium or a hundredweight, consisting of 60 minæ of *one hundred* drachmæ, as well as 10,000 (100 × 100 drachmæ) (before divided into minæ).

If, then, an original talent was divided by 100, it would give a weight or pondus or pound of 100 drachmæ of 48 chalci, that is, 4800 chalci, or of 60 × 1 × 48, that is, 2880 original chalci, or 80 × 1 × 48 or 3640 reduced chalci, the sixty of the one equalling the 80 reduced of the other, and so on with 64, 72, 84, 96. It is thus, and (it seems) thus only, that the number and weight of grains in any given pound (as I shall show) are to be accounted for, whether they be Roman siliquæ of 6 to the scripulum, Troy grains of 24 to the penny, or "wheat" grains of 32 or 30 to the same: the siliqua being the double chalcus, and the Troy grain and the English wheat being the half chalcus, each, however, of different divisions of the same pound.

In the course of my researches I have become thoroughly convinced that to suppose that any known positive weight is to be arrived at by the multiplication of any number of a particular grain, say wheat, is a fallacy. A practical farmer well knows that the variation in a sack of wheat may be ten pounds, that is, five pounds either way, occasioned by the variation in seasons, let alone other causes of variation—so with the African carouba, the Roman siliqua, and the lentes. Kelly says, p. 87: "The weights and measures of India are extremely curious in the minuteness of their subdivisions. Thus the Ta is divided into a great number of twinklings of an eye, and the barleycorn into small seeds down to an atom of the sunbeam." People have chosen to speak of "grains" (as in 1266 in the Stat. 3 Ed., 51) as a measure of weight, and in our own country that statute declares the Norman penny to be 32 wheat-corns in weight. But these wheat-corns, on examination, as will be seen *post*, are really 32 half chalci of a determinate weight, and the absurdity of it more fully appears in the *absolute* exactness in the *same* weight in different countries thousands of miles apart; thus the Tripoli weight is absolutely the same as our Troy (see *post*, No. 50), and it is stated to be founded on the weight of a bean, ours,

however, on 32 wheat-grains! It certainly is wonderful how the two weights should have been preserved absolutely accurate, and the remark applies to the Swedish and Madras weight, each of 3.401 grammes, and other cases. Further on in this paper will be found the examination of known positive weights. These positive weights I have got from the Reports of the British Consuls abroad, made early in this century, by order of our Government in regard to Foreign Standards duly verified. The results of these reports are collected in Kelly's *Universal Cambist*, London, 1831, being a most valuable book. The British Consuls in many cases report the number of "grains" in the positive weight they are speaking of. When they do so, I place the number so reported immediately below the name of the place using the weight, and it will be seen that in *every case* they are deduced from the old Asiatic form of 48 chalci to the drachma, and not at all from the vegetable grains, which at best can only afford a rough and ready method of calculation. See particularly Nos. 22, 23, 31, 51, 82, and the note after No. 80 *post.*

As it will be most convenient to show these divisions of the talent into 60, 64, 72, 80, 84, 96 minæ, so that they can be referred to as forms, the following tables represent them, and to them I shall constantly refer.

But I must remark that the ancient Egyptians divided their weights in a different way; it was a binary or joint sexdecimal and decimal system, *i.e.*:

2 × 10 × 10 etc.	32 × 10 × 10 etc.
4 × 10 × 10 etc.	40 × 10 × 10 etc.
8 × 10 × 10 etc.	48 etc.
16 × 10 × 10 etc.	64 etc.
24 × 10 × 10 etc.	72 etc.

and so on.

Talent = 1200 *ounces, or* 10,000 *of its own drachmæ of* 48 *chalci.*

No. 1.	$\frac{T}{60}$ (24,000 dioboli of 12 chalci = 18,000 dioboli of 16 chalci.)	= 60 original (see *ante*) minæ of 20 original ounces. 6,000 original drachmæ of 48 chalci. 36,000 original obols of 8 chalci. 48,000 obols of 6 chalci, instead of 8 chalci. 18,000 original dioboli of 16 chalci. 24,000 dioboli of 12 chalci, instead of 16 chalci. 288,000 original chalci, 144,000 double chalci, 576,000 half chalci, and 1½ minæ = 864,000 half chalci.

No. 2.	$\frac{T}{64}$ (25,600 dioboli of 12 chalci = 1,920 of 16 chalci.)	= 64 reduced minæ of $18\frac{3}{4}$ original ounces = 60 original minæ.[1] 6,400 reduced drachmæ of 48 reduced chalci. 38,400 reduced obols of 8 reduced chalci. 19,200 reduced dioboli of 16 reduced chalci. 307,200 reduced chalci, 153,600 double chalci, 614,400 half chalci.
No. 3.	$\frac{T}{72}$ (28,800 dioboli of 12 chalci or 6 siliquæ = 21,600 dioboli of 16 chalci.)	= 72 reduced minæ of $16\frac{2}{3}$ original ounces = 60 original minæ. 7,200 reduced drachmæ of 48 reduced chalci. 43,200 reduced obols of 8 reduced chalci. 21,600 reduced dioboli of 16 reduced chalci (siliquæ). 345,600 reduced chalci, 172,800 double chalci, 691,200 half chalci.
No. 4.	$\frac{T}{75}$ (24,000 dioboli of 30 half chalci = 24,000 of 32 of No. 5.)	= 75 reduced minæ of 16 original ounces = 60 original minæ.[2] 7,500 reduced drachmæ of 48 reduced chalci. 45,000 reduced obols of 8 reduced chalci. 36,000 reduced oboli of 10 reduced chalci. 22,500 reduced dioboli of 16 reduced chalci. 18,000 reduced dioboli of 20 reduced chalci. 360,000 reduced chalci, 180,000 double, 720,000 half chalci.
No. 5.	$\frac{T}{80}$ (24,000 dioboli of 32 half chalci = 256 dioboli of 30 half chalci.)	= 80 reduced minæ of 15 original ounces = 60 original minæ.[3] 8,000 reduced drachmæ of 48 reduced chalci. 48,000 reduced obols of 8 reduced chalci. 24,000 reduced dioboli of 16 reduced chalci. 384,000 reduced chalci, 192,000 double chalci, 768,000 half chalci.
No. 6.	$\frac{T}{84}$ (288,000 dioboli of 14 chalci = 25,200 dioboli of 16 chalci.)	= 84 reduced minæ of $14\frac{2}{7}$ original ounces = 60 original minæ. 8,400 reduced drachmæ of 48 reduced chalci. 50,400 reduced obols of 8 reduced chalci. 57,600 reduced obols of 7 reduced chalci. 25,200 reduced dioboli of 16 reduced chalci. 28,800 reduced dioboli of 14 reduced chalci. 403,200 reduced chalci, 201,600 double chalci, 806,400 half chalci.
No. 7.	$\frac{T}{96}$ (288,000 dioboli of 16 chalci.)	= 96 reduced minæ = 60 original minæ. 9,600 reduced drachmæ of 48 reduced chalci. 57,600 reduced obols of 8 reduced chalci. 28,800 reduced dioboli of 16 reduced chalci. 460,800 reduced chalci, 230,400 double chalci, 921,600 half chalci.
No. 8.	$\frac{T}{100}$ Divided as follows, *i.e.*— (240 dioboli of 12 chalci or 24 half chalci, or 180 dioboli of 32 half chalci)	= 1 pound of 12 ounces. 100 drachmæ of 48 chalci. 60 original drachmæ of 48 chalci. 360 original obols of 8 chalci. 480 obols of 6 chalci instead of 8 chalci. 180 original dioboli of 16 chalci. 240 dioboli of 12 chalci, instead of 16 chalci. 2,880 original chalci, 1,440 double chalci, 5,760 half chalci. A pound and a half = 8,640 half chalci ; a

[1] A mina and a half = 921,600 half chalci. Twenty ounces = 10,240 half chalci.

[2] As all these several divisions equal 60 original minæ, therefore No. 4 divided into 15 ounces or units each of 5 of these reduced drachmæ = 16 ounces or units of 5 of the reduced drachmæ of the next division, No. 5, because 75 is to 80 as 15 is to 16.

[3] See [2] above.

		pound and a third or sixteen ounces = 7,680 half chalci; a pound and a fourth, or fifteen ounces = 7,200 half chalci; three-quarters of a pound = 4,320 half chalci.
No. 9.	$\frac{T}{100} = \frac{P}{64}$ (256 dioboli of 24 half chalci or 192 dioboli of 32 half chalci.)	Pound of 12 ounces. 64 reduced drachmæ of 48 reduced chalci. 384 reduced obols of 8 reduced chalci. 512 reduced obols of 6 reduced chalci. 192 reduced dioboli of 16 reduced chalci. 256 reduced obols of 12 reduced chalci. 3,072 reduced chalci, 1,536 double chalci, 6,144 half chalci. 16 ounces would be 8,192 of these half chalci, and 1½ pound of 9,216 half chalci, eight ounces of 4,096 half chalci, and twenty ounces of 10,240 half chalci.
No. 10.	$\frac{T}{100} = \frac{P}{72}$ (288 of 12 chalci or 24 half or 216 dioboli of 16 chalci.)	Pound of 12 ounces. 72 reduced drachmæ of 48 reduced chalci. 432 reduced obols of 8 reduced chalci. 216 reduced dioboli of 16 reduced chalci. 3,456 reduced chalci, 1,728 double chalci or siliquæ, 6,912 half chalci. A pound and a half = 10,368 half chalci, and 16 ounces 9,216 half chalci, and 8 ounces 4,608, and 15 ounces 8,640 half chalci; 20 ounces are 2,880 siliquæ or double chalci, or 11,520 half chalci.
No. 11.	$\frac{T}{100} = \frac{P}{75}$ (240 dioboli of 30 half chalci or 240 dioboli of 32 of No. 12.) Note, 75 is to 80 as 30 is to 32.	Pound of 12 ounces. 75 reduced drachmæ of 48 reduced chalci. 450 reduced obols of 8 reduced chalci. 480 reduced obols of 7½ reduced chalci. 225 reduced dioboli of 16 reduced chalci. 240 reduced dioboli of 15 reduced chalci. 3,600 reduced chalci, 1,800 double chalci, 7,200 half chalci = 7,680 of No. 12 (*see* *note 1), 15 ounces are 9,000 half chalci, 16 ounces 9,600 half chalci, 8 ounces 4,800 half chalci, and a pound and a half 10,800 half chalci.
No. 12.	$\frac{T}{100} = \frac{P}{80}$ (240 dioboli of 32 half chalci or 256 of 30 half chalci. See Note * above.)	Pound of 12 ounces. 80 reduced drachmæ of 48 reduced chalci. 480 reduced obols of 8 reduced chalci. 512 reduced obols of 7½ reduced chalci. 240 reduced dioboli of 16 reduced chalci. 256 reduced dioboli of 15 reduced chalci. 3,840 reduced chalci, 1,920 double chalci, 7,680 half chalci. 8 ounces of this would be 5,120 half chalci, and 16 ounces 10,240 half chalci, 18 ounces 11,520 half chalci. See Note * above in No. 11.

[1] Note. As all these divisions equal a pound, therefore 15 units of 5 of these reduced drachmæ of 48 reduced chalci of form 11=16 units of the next (No. 12) division of 5 reduced drachmæ of 48 reduced chalci of that division, and it is owing to this consideration that the entry in Domesday "inter Ripam" is capable of explanation, and is as I have explained by the entries in Domesday Book "inter Ripam". I reproduce the explanation at the end of these forms, showing how 240 (7,200 of division 11 divided by 30) of 32 half chalci of division 12 must therefore equal 256 (7,680 of division 12 divided by 30) of 30 of that division.

No. 13.	$\frac{T}{100} = \frac{P}{84}$ (288 dioboli of 14 chalci or 252 dioboli of 16 chalci.)	Pound of 12 ounces. 84 reduced drachmæ of 48 reduced chalci. 504 reduced obols of 8 reduced chalci. 576 reduced obols of 7 reduced chalci. 252 reduced dioboli of 16 reduced chalci. 288 reduced dioboli of 14 reduced chalci. 4,032 reduced chalci, 2,016 double chalci, 8,064 half chalci. A pound and a half = 12,096 half chalci, 15 ounces 10,080 half chalci, 16 ounces 10,752, 18 ounces 12,096 half chalci.
No. 14.	$\frac{T}{100} = \frac{P}{96}$ (288 dioboli of 32 reduced half chalci.)	Pound of 12 ounces. 96 reduced drachmæ of 48 reduced chalci. 576 reduced obols of 8 reduced chalci. 288 reduced dioboli of 16 reduced chalci. 4,608 reduced chalci, 2,304 double chalci, 9,216 half chalci. A pound and a half = 13,824 half chalci. 15 ounces = 11,520 half chalci. 16 ounces = 12,288 half chalci, 6,144 chalci. 8 ounces = 6,144 half chalci.
No. 15.	$\frac{T}{120} =$	Pound of 10 *original ounces* or 100 drachms. 100 drachmæ of 48 chalci = 4,800 chalci. 600 obols of 8 chalci. 300 dioboli of 16 chalci. $1\frac{1}{2}$ pound would be 7,200 chalci. Of course this pound might be divided as the hundredth part of a smaller talent (consisting of 1,000 ounces instead of 1,200), just as in any one of the above pounds (see Nice, *post*, 29, and Barcelona, No. 81). Priscianus has a passage in his *Liber de figuris numerorum* as follows: "Idem Livius in xxxviii ab urbe condita ostendit magnum talentum Atticum Octaginta habere libras et paulo plus cum supra dictorum computatio manifestet Octaginta tres libras et quatuor uncias habere talentum quod est sex milia denariorum." $12 \times 83 + 4 = 1{,}000$ ounces.
No. 16	$\frac{T}{100} =$	Pound of 100 drachmæ or 4,800 chalci. (Egyptian.) 4,800 = pound. 6,000 = $1\frac{1}{4}$ pound. 6,400 = $1\frac{1}{3}$ pound. 7,200 = $1\frac{1}{2}$ pound. 8,000 = $1\frac{2}{3}$ pound. 9,600 = 2 pounds. 12,800 = $2\frac{2}{3}$ pounds. And so on; but it is to be observed that any one of the above divisions might be taken as the foundation of a new weight, as with the former forms.

Explanation of the Entry "inter Ripam" in Domesday, referred to Forms 11 *and* 12 ante.

We have in D. Bk. itself, relating to the Survey of that part of Mercia lying between the Ribble and the Mersey, a recital showing the number of carucæ that there went to a hide, and their "valets" at the time of Edward the Confessor.

These "valets" are there sometimes stated in Norman currency of 12 ounces or oræ of 20 denarii to the pound, and in others in the Mercian currency, tallying exactly with the foregoing forms, *i.e.*, that which gives 240 pence of 32 half chalci of Form 12, and also 256 denarii, *i.e.*, 16 oræ or solidi of 16 pence of 30 half chalci of Form 12 to the pound or mark; but there is a general statement applying to all these carucæ and the thains who owned them, to be found at the head of the second column of fol. 269*b*, D. Bk., running thus: "*Omnes isti taini habuerunt consuetudinem reddere ii oras denariorum de unaquaque caruca.*"

I have extracted from D. Bk. and placed in the next table, below the manors to which the recital refers, their carucæ and their valets as stated in D. Bk., placing in adjoining columns such valets in Norman and Mercian currency, the figures in brackets being mine. As the valet for one car is stated to be 32 denarii or 2 ores, it follows that each Mercian ora or solidus contained 16 denarii, as at Pampesuuorde in Cambridgeshire. (Hamilton's *Inq. Com. Cant.*, p. 38.) We learn also from the valets of Latune and Hirleton, where half a hide is put at 10 sol. and viii. denarii (128 pence), that there must have been *four* car in half a hide (4 × 32) or *eight* in a whole one; the valet therefore for a whole hide was 256 Mercian pence or one mark, equalling, as shown in the subjoined table in other entries, one Norman pound of 240 pence. This recital of D. Bk. refers to manors, lands, and carucæ as they were in the time of Edward the Confessor when held by Roger Pictavensis: the statement of the same lands and the re-arranged carucæ working thereon, when held by the grantees of Roger at the time of D. Bk., is placed later on in the same folio, and shows different carucæ and uniform valets in Norman money. It has been seen that by the valets one hide by custom would pay 256 pence (8 × 32); supposing then that 32 Mercian pence represented the payment for a virgate (and we know that it did from the entry in regard to Stochestede, where a virgate and a half is valued at 4 sol., *i.e.*, 3 Mercian solidi of 16 pence each, or 4 solidi of 12, *i.e.*, in all 48 pence), it follows that there were 8 virgates in a hide, each valued at 32 Mercian pence

per virgate; this at one penny per acre would give 16 acres to the bovate, 32 to the virgate, and 256 to the hide or pound paying unit.

1 hide = 256 acres, *i.e.*, 8 virgates of 32 acres = 16 bovates of 16 acres
Single car. = 32 „ 1 „
*Double car. = 64 „ 2 „
Norman, 240 den. to pound, 20 sol. to pound, 12*d.* to sol., 32 grains to den.
Mercian, 256 „ 16 „ 16*d.* „ 30 „

Name of Manor.	No. of Hides.	No. of 'Car.'	'Valet' T. R. E. as stated in D. Bk.	Form 12. Norman Value in Denarii (32 wheat grains to den.).	Form 12. Mercian Value in Denarii (30 wheat grains to den.).	No. of Grains.	The 'Valet' stated in
Hitune . .	1	4*	20 sol.	240	256	7,680	Norman money
Stochestede .	(1/16) 1½ virg.	(1½)	4 „	45	48	1,440	Mercian „
Sextone . .	1	(8)	16 „	240	256	7,680	„ „
Chirchedele .	½	(4)	10 „	120	128	3,840	Norman „
Liderlant . .	½	(4)	8 „	120	128	3,840	Mercian „
Hinne . . .	½	(4)	8 „	120	128	3,840	„ „
Torentum .	½	(4)	8 „	120	128	3,840	„ „
Mele . . .	½	(4)	8 „	120	128	3,840	„ „
Uluentune .	(¼)	2	64 den.	60	64	1,920	„ „
Esmedune .	(⅛)	1	32 „	30	32	960	„ „
Alretune . .	½	(4)	8 sol.	120	128	3,840	„ „
Spec . . .	(¼)	2	64 den.	60	64	1,920	„ „
Cilderunelle .	(½)	(4)	8 sol.	120	128	3,840	„ „
Wilbaldeslei .	(¼)	2	64 den.	60	64	1,920	„ „
Vuetone . .	(⅛)	1	30 „	30	32	960	Norman „
Wauretreu .	(¼)	2	64 „	60	64	1,920	Mercian „
Boltelai . .	(¼)	2	64 „	60	64	1,920	„ „
Achetun . .	(⅛)	1	32 „	30	32	960	„ „
Fornebei . .	(½)	4	10 sol.	120	128	3,840	Norman „
Emuluesldel .	(¼)	2	64 den.	60	64	1,920	Mercian „
Hoiland . .	(¼)	2	64 „	60	64	1,920	„ „
Daltone . .	(⅛)	1	32 „	30	32	960	„ „
Schelmeresdele	(⅛)	1	32 „	30	32	960	„ „
Erengermeles	(½)	(4) 2*	8 sol.	120	128	3,840	„ „
Otegrimele .	½	(4)	10 „	120	128	3,840	Norman „
Latune . .	½	(4)	10 sol. 8d.	120	128	3,840	Mercian „
Herletune .	½	(4)	10 sol. 8d.	120	128	3,840	„ „
Melinge . .	(½)	(4) 2*	10 sol.	120	128	3,840	Norman „
Bartune . .	(⅛)	1	32 den.	30	32	960	Mercian „
Heleshall . .	(½)	(4) 2*	8 sol.	120	128	3,840	„ „
Total . .	11 11/16	93½	pence .	2,805	2,992	—	2,992 ac. = 93½ car. of 32 acres to car. = 1 virg.
„ . .	—	—	grains .	89,760	89,760	89,760	11 11/16 hides of 256 to hide.

The antiquity of the division of the pound or 100 part of the talent into 256 denarii according to Form 12 is shown by the *Ancient Laws of Wales* (Record Commission, 1841, p. 90; Venedotian Code, Book 2, c. xvii), being a manuscript written long before

1080, but containing the ancient laws of Wales, said to have been collected and compiled by Howel-dda in or about the year 743, and in it we find that Dyonmal, son of Clydno, measured the whole of Great Britain "*before the Crown of London and supremacy of this Island was seized by the Saxons*". In it the *pound paying* unit of land was the "mænol" (see *Ancient Laws, etc.*, p. 90), consisting of 1,024 erws. As the "mænol" was the pound paying unit, each erw would pay one farthing if the pound consisted of 256 pence, *i.e.*, the very number the pound would contain according to Form 12. Taking the divisions of the land as stated in the *Ancient Laws*, the following represents it:—

1 erw = 1 farthing.
4 erws = 1 tydden = 1*d.*
16 erws = 1 rander = 4*d.*
64 erws = 1 gavael = 16*d.*
256 erws = 1 trev = 64*d.* or threescore Norman pence of 32 wheat grains or 24 Troy (*see* Forms 11 and 12).
1,024 erws = 1 mænol = 256*d.* = 1 pound of silver.

At page 91 of the *Ancient Laws, etc.*, sec. 15, written in the thirteenth century, we read (in language suited to the money of that day), "Three score pence is charged on each trew of the four that are in a mænol, *and so subdivided into quarters in succession until each erw of the tydden be assessed*," therefore there is no erw in the mænol free from taxation, an expression which is only consistent with a pound of 256 pence. In the same way the treaty and the money in the treaty between Alfred and Guthrum are to be explained. I have explained it at p. 242 *et seq.* of vol i of *Domesday Studies*, the results of which, as the explanation is too long to put here, see No. 45*e* and No. 45*f post.*

I will now proceed to apply the above principles to known talents and existing pounds, merely remarking that it is marvellous how well preserved weights have been—no thanks, however, to vegetable grains—so closely have they been preserved that in some cases they are *absolutely* alike; for instance, the Barbary rottol and the Troy pound, the Swedish and the Madras drachms, etc.; and I shall call everything "exact" which does not vary more than the fraction of a Troy grain in an ounce.

I will take Solon's Attic weight first as a standard to which Xenophon and others refer, and because it happens to be the best known. The weights of existing drachmæ (of which there are hundreds still in existence) show it to be between 4.3735 grammes, 67.5 Troy, and that at which Hultsch places it, viz., 4.3665 grammes —practically this is the same thing, as a pound founded on the one

makes 5,400 Troy grains, and founded on the other 5,390, which is exactly the same within my heretofore expressed meaning of the word "exact". Taking 8,000 of these, Solon's drachmæ, to find the *original* talent, it resolves itself into this :

Original Asiatic Talent, 34,987 grammes, or 540,000 Troy grains.
Talent ÷ 60 mina of 583.11 grammes, or 9,000 Troy grains.
Talent ÷ 80 mina of 437.335 grammes, or 6,750 Troy grains.
Talent ÷ 100 mina of 349.87 grammes, or 5,400 Troy grains.

We have therefore here as a standard, firstly, a drachma of 3.4987 grammes; secondly, a drachma of 5.8311 grammes, when the *original* talent is divided normally (Form 1) into 60 minæ each of 100 drachmæ ; and thirdly, a drachma of 4.37335 grammes, when Solon divided the original talent into 80 minæ each of 100 of such drachmæ, so the talent, reckoned according to Form 1, would be 288,000 chalci, and according to Form 5, would be 384,000 chalci. The Troy grain, of course, is not derived from it, but from a very different talent, hereinafter shown.

The Asiatic Talent of 34,987 *grammes* (540,000 *Troy*).

The identity of this talent is proved thus : under the head of an Asiatic "Siclos" Photius describes it as equal to 8 Attic obols—taking 4.37335 grammes as the Attic drachma (see *ante*), or 67.5 Troy ; and dividing it by six to get the obol, we have .72888 grammes as the Attic obol ; this multiplied by 8 gives 5.83104 as the "Siclos" ; this multiplied by 100 gives the mina (100 drachmæ), or 583.104 ; and this multiplied by 60 gives the talent of 34986.24 (540,000 Troy) ; it is also the contents of 80 Attic drachmæ of 4.37335 grammes or 75 Eubean drachmæ of 4.665.

	Error.	Place.	Weight.	Talent of 34,987 grammes.
17.	Exact.	ENGLAND.	Pound.	Tower (Talent divided by 100) : 349.87 grammes (or 5400 Troy), divided into 12 ounces of 3456 chalci or 6912 half chalci, Form 10, the half chalcos or grain would therefore be .05062 grammes. This is the Tower Pound of 24 solidi of 12 peninga = 288, if the peninga were of 24 half chalci of Form 10. If the pound was divided according to Form 8 into 240 peninga, of course there would be 5760 half chalci of .0607 grammes, and the pound would divide into 240 denarii

	Error.	Place.	Weight.	Talent of 34,987 grammes.
				of 24 half chalci of Form 8 to the denarius, but I imagine that the Anglo-Saxons, using the long hundred, divided their pound into 288 peninga like the Romans. This pound I have no doubt the Saxons found here when they came; it is, as we have seen, formed on the same talent as Solon's Attic drachmæ which have been dug up in England.
18.	Exact.	ENGLAND.	Libra.	Mercatoria of Fleta, 437.335 grammes, or 8640 half chalci of Form 10 (6750 Troy), *i.e.*, fifteen ounces, or solidi of 12 peninga of 24 half chalci. This is the pound of 15 ounces, marked 15, in pre-Norman times; it is Solon's Attic mina, 60 of which made his reduced talent of 26,232 grammes, and eighty the original talent, or 34,987 grammes. The identity of it is confirmed by the following extract, to be found at page 33 of the Appendix to the Government Reports on Weights and Measures, 1820, under the word "Stone" of lead: "15 pounds each, 25 shillings in weight, 31 Ed. I: that is, each of 6750 grains." This of course is the Norman arrangement; the Saxon would be 30 shillings of 288 half chalci of Form 10 (see the division of No. 83); Pollux calls it the Italian mina (see also No. 86). The following are all derived from the same talent (*see* note after No. 80 and No. 83).
18 A.	Exact.	SAYDE (Syria). Kelly, p. 227.	Rottolo.	Of Acre, 2186.082 grammes or 43,200 half chalci (33,740 Troy). This is 5 of Fleta's libræ mercatoriæ, see above; within *two* Troy grains in the pound, *i.e.*, 6748 (Troy, instead of 6750 Troy). There was another rottolo of 60 Troy ounces of 10 drachms to ounce.
18 B.	Exact.	ARRAGON, 6144. Kelly, p. 23.	Pound.	Pensil (talent ÷ by 100): 349.8 grammes or 6144 grains (half chalci, Form 9), (5398 Troy). This is within 2 grains of the Tower pound of 5400 Troy. This is divided into 12 ounces of 192 arienses each, of 32 grains of .05694 grammes. The mark of 8 ounces is 50 Troy grains light, and is that of Spain.
19.	Exact.	BRUNSWICK, 8192. Kelly, p. 54.	Pound.	Commercial (talent divided by 75); 466.891 or 8192 grains or half chalci of .057 grammes, Form 9 (7206 Troy). This is divided into 1024 hellars or 16 ounces of 32 pfenings of 16 half chalci each.

	Error.	Place.	Weight.	Talent of 34,987 grammes.
20.	Exact.	LEIPSIC, 7680. Kelly, p. 205.	Pound.	Commercial, 466.8 grammes (talent divided by 75), or 7680 half chalci of .06079 grammes, Form 8 (7206 Troy). Note that 512 of 15 = 256 of 30; there are 16 ounces of 512 pfenings.
21.	Exact.	FRANKFORT, 8192. Kelly, p. 148.	Pound.	Commercial (talent divided by 75): 467.15 grammes or 8192 half chalci, .0571 grammes, Form 9 (7210 Troy), divided into 1024 hellars and 512 pfenings.
22.	1 Troy grain in ounce out.	COLOGNE, 8192. Kelly, p. 71.	Pound.	Commercial (talent divided by 75): 467.538 grammes or 8192 grains or half chalci of .0571 grammes, Form 9 (7216 Troy). Divided into 16 ounces of 512 pfenings. The mark of 8 ounces is half this. Each of the half chalci is subdivided into 16 parts, and each 16 half chalci equal 17 eschen. So here we have the weight of the half chalcos, and the weight of the vegetable grain as supposed.
23.	Ditto.	HAMBURG, 8192. Kelly, p. 170.	Pound.	Gold and silver (talent divided by 75): 467.538 or 8192 half chalci of .0571 grammes, Form 9 as above; but note this is accommodated to the Dutch esch, which is $\frac{1}{16}$ lighter, so that there would be 544 eschen instead of 512 grains to an ounce. 512 + a sixteenth = 544; there are therefore 8704 eschen, or 8192 half chalci of Form 9, called at Hamburg Richt pfenings. *See* Cologne above, and *see* Zürich *post*, No. 31.
24.	$1\frac{1}{16}$ Troy out.	BERLIN, 7680. Kelly, p. 34.	Pound.	Commercial (talent divided by 75), *i.e.*, 468.50 grammes, or 7680 half chalci of Form 8 (7231 Troy), divided into 512 pfenings or 16 ounces.
25.	$1\frac{5}{16}$ Troy grain out in ounce.	STETTIN. Kelly, p. 324.	Pound.	Commercial (talent divided by 75): 467.7 grammes of 16 ounces (7219 Troy). Divided as at Cologne.
26.	$1\frac{1}{4}$ Troy grain out in ounce.	WIRTEMBERG. Kelly, p. 369.	Pound.	Commercial (talent divided by 75): 467.8 grammes of 16 ounces (7220 Troy). Divided as at Cologne.
27.	2 Troy grains out in ounce.	KONIGSBERG 7680. Kelly, p. 198.	Pound.	Commercial (talent divided by 75): 468.5 grammes, 7680 grains or half chalci, Form 8 (7231 Troy), $\frac{1}{2}$ chalcos = .061 gramme, reckoned as at Berlin by an edict of 1714.
28.	$1\frac{1}{2}$ Troy grain out in ounce.	AIX LA CHAPELLE. Kelly, p. 2.	Pound.	Commercial (talent divided by 75): 468.705 grammes (7234 Troy), 512 pfenings in 16 ounces.
29.	Exact.	ST. GALL. Kelly, p. 350.	Pound.	(Heavy) (talent divided by 60) or the mina of 584.164 grammes (9016 Troy), pound of 20 ounces. This is the original mina of the talent; 34,987 grammes ÷ 60 = 583.1 grammes.
30.	$1\frac{9}{16}$ Troy grain out in ounce.	Ditto.	Pound.	(Light) (talent divided by 75): 464.822 grammes (7175 Troy) in 16 ounces.

	Error.	Place.	Weight.	Talent of 34,987 grammes.
31.	Exact.	ZURICH, 8192. Kelly, p. 375.	Pound.	Light (talent divided by 75): 468.6 grammes, 8192 grains or half chalci of Form 9 (7233 Troy). This pound is 16 ounces, but this is accommodated to the Zürich grain, which is $\frac{1}{16}$ lighter, so there are 8704 Zürich grains (see Hamburg, *ante*, No. 23 of Form 9), and 17 of such grains in 16 of the 8192 and in the 512 pfenings.
32.	...	Ditto, 9216.	Pound.	Heavy. This is 18 ounces instead of 16, and note that in both 16 grains (17) are put into the penny, and in the pound there are 9216 of Form 9, 8138 Troy grains.
33.	$1\frac{2}{3}$ Troy grain out in ounce.	CANDIA. Kelly, p. 62.	Rottello.	527.25 grammes, 18 ounces of the Tower pound (8143 Troy).
34.	Exact.	ULM. Kelly, p. 352.	Pound.	Commercial (talent divided by 75): 468.7 grammes (7234 Troy). This is 16 ounces or two marks.
35.	$2\frac{3}{4}$ Troy grains out in ounce.	ROTTERDAM. Kelly, p. 297.	Pound.	Light (talent divided by 75): 469.38 grammes, or 7243 Troy grains, or 7680 of half chalci of Form 8, of .0611 grammes.
36.	$1\frac{7}{12}$ Troy grain out in ounce.	GENOA, 6912. Kelly, p. 159.	Peso.	Grosso (talent divided by 100): 348.6 grammes, 6912 grains or half chalci, Form 10, of .05043 grammes (5381 Troy). This is divided into 12 ounces of 24 denarii of 20 grains, like the Anglo-Saxon, or 288 in all. The talent of 34,860 grammes was also divided into 100 Rottoli of 18 ounces, or 150 pounds of 12 ounces. There was a Peso Sotile of 316.963, of which the peso grosso is ten per cent. heavier.
37.	$3\frac{3}{4}$ Troy grains out in ounce.	MECCA. Kelly, p. 226.	Rottolo.	Talent (divided by 75): 462.874 grammes in 15 ounces (7144 Troy grains). Note, divided into 15 instead of 16.
38.	$2\frac{1}{4}$ Troy grains out in ounce.	BETELFAGUI. Kelly, p. 40.	Rattlo.	Talent (divided by 75): 462.198 in 16 ounces Vakias (7136 Troy), 7680 half chalci (Form 3), of .06019 grammes.
39.	4 Troy grains out in ounce.	STRASBURG. Kelly, p. 327.	Livre.	470.778 (7266 Troy) or 7680 half chalci of Form 8, of .0613 grammes.
40.	Exact.	OVIEDO. Kelly, p. 226, vol. ii.	Talent.	Or 6990.996 grammes, or 20 pounds of 349.549. In 12 ounces like the Anglo-Saxons, 5395 Troy grains or 6912 half chalci of Form 10.
41.	5 Troy grains out in ounce.	GALICIA. Kelly, p. 150.	Pound.	Commercial (talent divided by 60): 576.0 grammes of 20 ounces. Sixty of this is the Tower talent, viz., 60 × 5760 grammes = 34,560 grammes, less 5 Troy grains in ounce. Twelve hundred ounces in talent. See No. 44.
42.	5 Troy grains out in ounce.	CONSTANCE. Kelly, vol. ii, p. 224.	Pound.	Commercial (talent divided by 75): 472. grammes (7285 Troy grains).

	Error.	Place.	Weight.	Talent of 34,987 grammes.
43.	5 Troy grains out in ounce.	ERFURT. AUGSBURG. Kelly, p. 25.	Mark.	Exactly the same. Eight ounces of the talent (or talent divided by 150) : 236.036 grammes or 3840 half chalci of .0614 grammes, Form 8. Divided into 256 pfenings of 15 half chalci and 8 ounces. There are 3643 Troy grains.
44.	5 Troy grains out in ounce.	JAPAN. Kelly, p. 197.	The Catty	Talent (divided by 60): 589.607 grammes of 20 ounces of 29.48 grammes to ounce. 9100 Troy grains or 455 to ounce. See No. 41.
45.	$2\frac{5}{8}$ Troy grains out in ounce.	ALEXANDRIA Kelly, p. 4, and vol. ii, p. 224.	Rottolo.	Zauro, double (talent divided by 75) : 938.5121 grammes, 2 pounds each of 16 ounces of 469.256 grammes. Total, 14,485 Troy grains, 15,360 chalci, Form 8, of .0611 grammes.

It is to be observed that (in all the above cases, when the original talent of 34,987 grammes is divided by 75) the same result would be attained by dividing the original Troy talent of 37,320 grammes by 80, both divisions produce 100 of the drachma of 4.665, which is the Eubœan drachma, so it is quite possible that both weights were in England side by side. The talent of 34,987, divided by 80, produces 100 of Solon's Attic drachma of 43,665, or 4.373, as already stated, and the talent of 32,744 (see *post*), divided by 75, would produce the same result.

The Eginetan, Syro-Phœnician, Assyrian, and Chinese Talent of 37,320 *grammes, or* 576,000 *Troy grains, or* 10,000 *drachmæ of* 3.7320.

This talent is well identified by existing drachmæ of Egina of 6.22 grammes or 96 Troy grains, *i.e.*, 60 × 622 grammes (the mina) = 37,320 the talent (see Hussey, *Weights and Measures*, p. 59), and also by the prevalence in old times on the sea-coast of Asia Minor and the Islands of the little gold piece of 40 Troy grains (*Hussey*, p. 72), or 2.59168 grammes, 144 of which make exactly 373.2 grammes, and 100 of these latter the talent. Moreover, there are in the British Museum some large stone ducks dug up at Babylon, weighing 480 *Troy* ounces, and therefore they would be 40 Troy pounds or 14,928 grammes, *i.e.*, 4 × 373.2 (Troy pound). On the back of some of these ducks there are certain inscriptions stating them to be thirty mana or half $\frac{60}{2}$ a Babylonian talent (see *Discoveries in the Ruins of Nineveh and Babylon*, by Layard, 1853, p. 100) ; each one of these, therefore, would be 30 of

16 ounces (that is, 497.6 grammes, 16 × 31.1 grammes or Troy ounce), and therefore 75 of these minæ, according to Form 4, make the talent of 37,320 grammes, the hundredth part of which is the Troy pound and the 75th part the Babylonish maneh of 497.6 grammes, and it is also the amount of 80 Eubœan drachmæ of 4.665 grammes. Moreover, there are two stone weights dug up at Herculaneum, numbered 190 and 191 by Bayardi (see *Boeckh*, p. 183), and they each weigh 3731 grammes, that is, 10 Troy pounds each, or 800 Eginetan drachmæ of 4.665.

	Error.	Place.	Weight.	Talent of 37,320 grammes.
45. (*a*)	Exact.	ENGLAND, 5760.	Troy.	Pound (talent divided by 100): 373.2 grammes or 5760 half chalci, Form 8, *i.e.*, 5760 Troy. Divided into 12 ounces or 240 pennies of 24.
45. (*b*)	Exact.	ANGLO-SAXON, 5760.	Troy.	373.2 grammes or 5760 half chalci of Form 10. Divided into 12 ounces or 288 pennies of 20 half chalci.
45. (*c*)	Exact.	APOTHECARIES, 5760.	Troy.	373.2 grammes of 5760 half chalci of Form 8. Divided into 12 ounces of 288 scruples of 20 half chalci. Five of these half chalci equal 8 of Form 14.
45. (*d*)	Exact.	BABYLON, Ancient.	Mina.	497.6 grammes or 7680 half chalci of Form 8, divided into 16 ounces. This is one of the 30 mana described above.
45. (*e*)	Exact.	"INTER RIPAM."	Pound.	Talent (divided by 100): 373.2 grammes or 7680 half chalci of Form 12 (5760 Troy), *i.e.*, 12 ounces of 240 pence of 32 of such half chalci (see explanation of "inter ripam" *ante*, and also notes to Forms 11 and 12 *ante*.
45. (*f*)	Exact.	"INTER RIPAM."	Pound.	373.2 grammes or 7680 half chalci of Form 12 (5760 Troy), 16 solidi of 16 pence (256) of 30 of such half chalci (see *ante*, explanation of "inter ripam").
46.	Exact.	BASSORA (Arabia), 72. Kelly, p. 30.	Miscal.	Talent (divided by 8000): 4.665 grammes 72 grains (72 Troy), this is the Eubœan drachma, and 80 of them make the Troy pound, and the miscal is the exact weight of the old Eubœan drachma of 4.665 grammes. But 100 of these drachmæ go to the pound or checki, making exactly 466.5 grammes, or 7200 Troy grains or chalci, *i.e.*, 15 ounces of 31.1, and the arrangement would be according to Form 8. The ½ chalcos is .064792 gramme or a Troy grain (*see* No. 18 and paragraph after No. 45).
47.	Exact.	ABYSSINIA, 4800. Kelly, p. 2.	Rottolo.	Talent (divided by 120): 311 grammes, 4800 Troy grains or half chalci, is therefore exactly 10 Troy ounces or

	Error.	Place.	Weight.	Talent of 37,320 grammes.
				ten-twelfths of the Troy pound ; in other words, the talent would be divided by 120 instead of 100, thus producing 120 rottolo instead of 100 pounds—so, instead of 5760 half chalci to the pound, there would be only 4800, according to Form 15. The half chalcos is .064792 grammes or Troy grains.
48.	Exact.	SAYDE, 28,758. Kelly, p. 227.	Rottolo.	Of 60 ounces of 10 drachms to ounce of 31.037, 1862.251 grammes or 28,758 half chalci or Troy grains, giving 479.3 Troy grains to the ounce, which is according to Form 15. Talent divided by 120.
49.	Exact.	NICE. Kelly, p. 269.	Pound.	Commercial (talent divided by 120) : 311.6 grammes, 4800 grains or half chalci of Form 15 (4809 Troy), 10 ounces as above, but divided however into 10 ounces.
50.	Exact.	TRIPOLI (Barbary), 7680. Kelly, p. 379.	Rottolo.	(Talent divided by 75) : 497.6 grammes, 7680 grains or half chalci, Form 8 (7680 Troy), 16 ounces of 10 drachms to ounce, 16 kharouba to drachm—there would then be 3 half chalci or Troy grains to the kharouba.
51.	Exact.	TRIESTE and VIENNA, 8192. Kelly, p. 336.	Pound.	Commercial 559.6. This is $1\frac{1}{2}$ pound Troy, divided however into 16 ounces instead of 18; there are 512 pfenings in it, so the $\frac{1}{2}$ chalci would be 8192, Form 9, instead of 8640 half chalci, Form 8, and there would be 16 half chalci in the pfening, or .06831 grammes each. Each half chalcos is divided into 16 parts, making 131,072 right pfenings in all.
52.	Exact.	VERONA. Kelly, p. 348.	Peso.	Grosso (talent divided by 75) : 497.343 grammes (7676 Troy), or half chalci 7680, Form 8). This is 16 ounces of Troy pound.
53.	3 grains.	CHINA, 1000. Kelly, p. 67.	Catty.	Of 16 tales of 37.566 or 576 grains or half chalci, so there are in the tale 576 grains instead of 480, *i.e.*, 12×48, instead of 10×48, which is our Troy ounce, but the tale is divided decimally into 1000 cash. The tale is therefore the 10th part of the Eginetan or Troy pound, and as there are 1000 cash in it, there must be 1,000,000 cash in the Eginetan talent; it is evidently therefore divided in Egyptian manner (see Form 16).
54.	Exact.	EMBDEN. Kelly, p. 126.	Pound.	Commercial (talent divided by 75) : 496.8 grammes, 8192 grains or half chalci, Form 9 (7668 Troy), 16 ounces.
55.	Exact.	MUNICH. Kelly, p. 261.	Pound.	Commercial, 560.839 grammes, 8640 $\frac{1}{2}$ chalci grains, Form 8 (8656 Troy). This is 18 ounces of Form 8.

	Error.	Place.	Weight.	Talent of 37,320 grammes.
56.	Exact.	FIUME. Kelly, p. 128.	Funti.	Weight, 558.7 grammes, 9216 half chalci or grains of Form 9 (8623 Troy), being a pound and a half divided into 16 ounces of 576 half chalci to the ounce.
57.	2 Troy grains out in ounce.	BERGEN. Kelly, p. 32.	Pound.	Talent (divided by 75) : 499.61 grammes or 8192 half chalci grains, Form 9 (7716 Troy), 16 ounces.
58.	2 Troy grains out in ounce.	MOCHA, 480. Kelly, p. 257.	Vakia.	One ounce, 30.970 grammes, 480 grains or half chalci of Form 16, but four into ten, *i.e.*, 40 of these ounces or vakia make a maund of 1238.80 grammes : ½ of this is 619.4 grammes, which is the Eginetan or Troy mina of 622 grammes. The talent is divided in the Egyptian way (see *ante*).
59.	2½ Troy grains out in ounce.	COPENHAGEN. Kelly, p. 76.	Pound.	Commercial (talent divided by 75): 500.71 grammes, 8192 grains or half chalci of Form 9 (7720 Troy), 16 ounces or 512 of 16 or 256 of 32 (*see* China, No. 53).
	Ditto.	BOLSANO. Kelly, p. 45.	Pound.	Commercial, 500.6 grammes, same positive weight.
60.	6 Troy grains out in ounce.	ALEPPO.	Metical.	Or drachma, 4.729 (the Eubœan is 4.665) grammes 72 grains (73 Troy).
61.	...	ALGIERS.	Metical.	80 of these make the pound of 5760, Form 8.
62.	Exact.	LUCCA, 6912. Kelly, vol. ii, 226.	Peso.	Grosso (talent divided by 100) : 373.48, 3456 chalci (5763 Troy). Divided into 12 ounces of 288 denarii and 6912 grani or half chalci, Form 10, *i.e.*, 24 grains or 12 chalci to each denarius, divided like the Anglo-Saxon division. The half chalci would be .054 grammes.
63.	Exact.	BREMEN. Kelly, p. 49.	Pound.	Commercial (talent divided by 75): 498.25 grammes (7690 Troy), 7680 half chalci of Form 8. Divided into 16 ounces and 512 "orts", giving 15 half chalci to "ort."

The Ethiopian and Egyptian Talent of 34,016 *grammes, or* 52,500 *Troy grains.*

The identity of this is fully proved in two ways. Firstly, from the Farnesian Congius, or the brass vessel formerly in the collection of Alexander Farnese, and which bears the old Roman inscription

IM P. CÆSARE
VESPES VI
T. CAES. AUG. F IIII^{COS}
MENSURÆ
EXACTÆ IN
CA PITOLIO
P. X

The contents of this filled with distilled water weigh exactly 3401 grammes. Secondly, from the inscription in the "Stele" of Barkal in the Museum of Bulag, where it appears that there was in Ethiopia a provincial weight-system of which the unit was a very small weight named a Pek, weighing 0.71 or 0.709 grammes. Now taking this unit to be or to indicate 10 chalci of .0709 grammes, and reckoning 480,000 to the *talent* in the usual way, we get the talent as before, 34,032 grammes. This weight is of peculiar interest to us in England; the Romans might have got it from Egypt, unless it existed in Italy before their advent to power, which is possible and probable, as it still exists there, as well as the Roman pound of 327.44 grammes.

	Error.	Place.	Weight.	Talent = 34,016 grammes.
64.	Exact. The ounce is 28.3463 grammes.	ENGLAND, 7680. Jeakes.	Pound.	Avoirdupois (talent divided by 75): 453.544 grammes or 7680 chalci of Form 8 (7000 Troy), 480 in the ounce —16 ounces. I have taken this division from "Jeakes' Arithmetic, Surveyed and Reviewed," London (1596), thus: "*The avoirdupois pound was parted in* 16 *ounces, every ounce into* 8 *drachms, and every drachm into* 3 *scruples, and every scruple into* 20 *grains.*" One of the pounds dug up at Herculaneum, described by Bayardi, weighed exactly 452 grammes.
65.	Exact.	ENGLAND. Kelly, p. 220.	Provincial.	Pound, 510 grammes (18 ounces), or 8640 chalci, Form 8. This is to be found in the counties of Cheshire, Cornwall, Devonshire, Dorsetshire, Gloucestershire, Herefordshire, Lancashire, Lincolnshire, Staffordshire, North and South Wales, and Westmoreland—see Government Report, but at Nuremberg, No. 73, the same weight is divided into 16 ounces.
66.	Exact.	ENGLAND. Kelly, p. 220.	Hundred	Weight that is 100 of the provincial pound. Of course a *hundred weight* could never be 112 pounds, but it must mean one hundred of some well-defined weight, and 51,000 grammes is exactly 112 avoirdupois pounds. Moreover, a stone weight of exactly this amount of 510 grammes was dug up by Mr. Layard in the ruins of Nineveh (*see* Norris).
67.	Exact.	FLORENCE, 6912. Kelly, p. 130.	Libra.	Talent (divided by 100): 339.5 grammes, 6912 grains ($\frac{1}{2}$ chalci), Form 10 (or 5240 Troy), 12 ounces of 288 denarii of 24 half chalci.
	...	LEGHORN, 6912.	...	Do.

	Error.	Place.	Weight.	Talent = 34,016 grammes.
68.	Exact.	MADRAS. Kelly, vol. ii, p. 223.	Star.	Pagoda weight, 3.401 grammes, 52.5 Troy. This is the drachma of the talent divided by 10,000, and of a pound divided by 100, and equals the Roman pound of 327.48 divided by 96 almost—8 of them going to the ounce, but 34,010 grammes existed as a separate talent in Asia, and Egypt, and in Egypt would be divided as in Form 16.
69.	6 Troy grains out in ounce.	PORTUGAL, 4608. Kelly, p. 211.	Marco.	Of 8 ounces, 229.46 grammes, as divided at Florence into 192 Escropulos or 4608 graos or ½ chalci, Form 10 (3541 Troy), 192 + 96 = 288: 8 + 4 ounces = 12. *See* No. 71. Half chalcus=.0498.
70.	1⅓ Troy grains out in ounce.	ROME, 6912. Kelly, p. 293.	Libra.	Talent (divided by 100): 339.121 grammes, 6912 grains or ½ chalci, Form 10 (5234 Troy), 12 ounces of 24 denarii of 24 half chalci of .04906.
71.	6¼ Troy grains out in ounce.	SPAIN, 4608. Kelly, p. 320.	Marc.	Of *eight* ounces, 230.043 grammes, 4608 grains or ½ chalci, Form 10 (3550 Troy), divided into 64 orchatos and 384 tomines of 12 grains. Gold is weighed by 10 ounces (not 12) of Form 8 = 4800 half chalci (*see* No. 69). Half chalcus = .04992.
72.	5 Troy grains out in ounce.	GENEVA, 8640. Kelly, p. 153.	Poids.	Foible (talent divided by 75): 458.831 grammes, 8640 grains or ½ chalci, Form 8 (7081 Troy), divided into 15 ounces of 24 deniers or 576 grains=18 ounces of 20 deniers or 480 grains. There is another weight of 18 ounces of 24 deniers to ounce.
72. (*a*)	2¼ Troy grains out in ounce.	LUCCA, 6912. Kelly, p. 224.	Peso.	Sottile (talent divided by 100): 337.77 grammes, 6912 grains or ½ chalci of Form 10, 12 ounces of 576 to ounce (5213 Troy).
73.	Exact.	NUREMBERG Kelly, p. 271.	Pound.	Of two marks, 509.9 grammes, 12,288 half chalci or 6144 chalci or grains, Form 14 (7870 Troy), 18 ounces, or a pound and a half divided into 16 ounces of 512 pfenings of 24 half chalci. This weight of 510 grammes has been dug up at Babylon (*see* Layard's *Nineveh and its Remains*), and is the pound one hundred of which is our hundred-weight. *See* No. 65.
74.	Exact.	PADUA, 6912. Kelly, p. 275.	Libra.	Sottile (talent divided by 100): 340.158 grammes or 6912 grains or ½ chalci, Form 10 (5250 Troy), *See* Venice. Kelly, p. 346.
75.	Exact.	RATISBON, Kelly, p. 286.	Pound.	Commercial (talent divided by 60): 568.6 grammes, 10,240 grains or half chalci, Forms 2 and 9 (8777 Troy). This is the mina of the talent, and sixty of it give 34,116 grammes as the talent. Twenty ounces divided into 16 ounces or 512 pfenings of 20.

	Error.	Place.	Weight.	Talent = 34,016 grammes.
76.	Exact.	ROSTOCK. Kelly, p. 296.	Pound.	Town standard for commercial dealings with Russia, 508.7 grammes, 8640 grains or half chalci, Form 8 (7852 Troy), 18 ounces avoirdupois. The Babylon weight, see England, *ante*.
77.	Exact.	SWEDEN. Kelly, p. 329.	Victualie	Weight 425.2. Eighty of this make the talent of 34,016, and there was a weight dug up at Herculaneum (see Bœckh, p. 182) weighing nearly 42,700, which evidently represents one hundred of these victualie weights.
78.	Exact.	SWEDEN. Kelly, p. 329.	Pound.	Metal or exportation, weight 340.1. One hundred of this make the talent, or 34,010 grammes.
79.	Exact.	MADRAS. Kelly, vol. ii, p. 223.	Star.	Pagoda weight 3.401 grammes. Ten thousand of this is the talent.
80.	Exact.	ALEXANDRIA Kelly, p. 4, & vol. ii, p. 224.	Rottoli.	Forfori (talent divided by 80), *i.e.*, 423.869 grammes or 6542 Troy.

NOTE.—The drachmæ of the talent of 34,010 grammes (*i.e.*, one hundred of 3.401) is not to be confused with the drachmæ of 3.41, which arises on the division of the Roman pound of 327.44, when divided by 96. This last is spoken of in Cleopatra's tables (C.X.) as one of the 128 drachmæ, in the following passage: "The mina has 16 ounces, 128 drachmæ, 384 grammata, 768 oboli, 1,152 thermoi, 2,304 ceratia, 6,144 chalci." 128 drachmæ of 3.41 grammes give 436.6 grammes, which is the attic mina, or Roman pound of 327.44 + ⅓, or 16 ounces. The computation of the chalci in this passage completely coincides with Form 14. The mina of 436.6 is Fleta's libra mercatoria (*see* No. 18).

The Asiatic (Persian?) Talent of 32,744 *grammes, or* 505,371 *Troy grains. The hundredth part of this is* 327.44 *grammes, or* 5,053 *Troy, and this is the Roman Pound.*

This talent and pound, which still exists in Italy, is not to be confused with another pound of 340.1, also still existing in Italy —they have often been so confused. The talent of 32,744 grammes, its Asiatic origin, and its hundredth part or Roman pound, is identified in various ways. Xenophon, in his *Anabasis*, 1, 5, 6, gives the "siglus" as seven and a half Attic obols. The Attic obol (see *ante*) was .72775 grammes (taking 4.3665 grammes, Hultsch's estimate of the Attic drachma, and the sixth of it, the obol, in the usual way) and seven and a half of the obol would give 5.45812 grammes as the corresponding Asiatic drachma of the minah, and 6000 of these (see Form *ante*) gives 32,744 as the talent and 327.44 as the pound. This weight is confirmed again thus: Pliny, xxxiii, 46, states the "aurei" to be at the rate of 40 to

the pound ; now several of these aurei are still in existence—there is one in the Bodleian, of the time of Julius Cæsar, weighing 126.5 Troy grains ; and one of Antony of 126 grains, and Raper speaks of many more—taking the mean of these 126.25 grains and multiplying that by 40 gives 5050 as the Roman pound. This weight is also confirmed by the weight of the scripular aurei, the weight of which (as the result of accurately weighing them) M. Letronne, *Sur l'Evaluation des Monnaies grecques et romaines*, puts at 21.368 French *grains*, or 17.52 Troy grains ; this multiplied by 288, the number of scripula in the pound, give 5045 Troy grains in the pound. It is well known that the Romans divided their pound into denarii, or drachmæ, at different times, in different ways ; thus, before Hannibal's time, by 72, after then to Nero's time, by 84, then by 96, and afterwards by 72 again, thus :—

	Error.	Place.	Weight.	Talent = 32,744 grammes.
81.	Exact.	ROME, Old.	Pound.	(Talent divided by 100): 327.44 grammes of 1728 siliquæ or double chalci, or 6912 half chalci, Form 10 (5053 Troy grains). This is the pound divided by 72 with 6 drachmæ of 4.547 grammes to the ounce—the talent consisting of 1200 ounces. Nos. 84, 86, 88, 90, 92, are existing examples of this division of the pound, etc., in Italy.
82.	Exact.	ROMAN, Old.	...	(Talent divided by 100): 327.44 grammes, divided by 96 in 96 drachmæ, or 12 ounces of 8 drachmæ of 3.41 to the drachma. A passage of Pollux states this to be 8 drachmæ to the ounce. As every drachma is supposed to contain 48 chalci, there would be (12×8) $96\times48=4608$ chalci. This is fully confirmed by the same passage, which tells us that 18 ceratia go to the drachma, and $2\frac{2}{3}$ chalci to the ceration, and $96\times18\times2\frac{2}{3}$ do. make 4608 chalci, which is well represented thus, $\frac{4608}{1728}$, Forms 8, 10, and 14, and so fully confirms my statement as to the origin of "grains".
83.	Exact.	ROMAN, Old.	...	327.44 grammes divided by 84 into 84 denarii of 3.898 grammes. This is clearly shown in the description given by Pollux of the Italian mina, or Fleta's libra mercatoria of 15 ounces (talent divided by 75, *i.e.*, 436.6 grammes), which he, Pollux, states to be 112 drachmæ (112×3.898 grammes, *i.e.*, $327.44+\frac{1}{3}$ or 109.146, *i.e.*, 436.586 grammes). This is the attic mina, *i.e.* a pound and a third or 16 ounces

	Error.	Place.	Weight.	Talent of 32,744 grammes.
				(84+28 = 12+4 ounces), or 4,032 chalci + 1344 = 5376 half chalci. He states the ounce to be 7 drachmæ. Taking the drachma to contain 48 chalci, as it always did, the number of the chalci in the mina would be (84 × 48) 4032 chalci, and in the 4 ounces 1344, Form 13. If the mina was divided according to Form 10, it would contain 3456+1152 chalci, or 4608 of that Form 10, or 384 denarii of 12 chalci of that form, instead of 288 of 14 of Form 13, as suggested in the forms. It will be seen how well this division of the pound corresponds, as suggested at page 263 of my *Domesday* paper, with the rod of 14 feet. See next case. See No. 86. *See* note after No. 80 and Nos. 18, 85
84.	...	ITALIAN.	Mina.	491.16 grammes being a pound and a half of 5184 chalci or 2592 siliquæ, thus described in Discorides Kuhn's *Collections*, xiii, 775: "The mina, according to the Italian authority, is 18 ounces, *i.e.*, a pound and a half, 144 drachmæ; but the Alexandrian mina is 20 ounces, that is 160 drachmæ," which is the mina I have described immediately after this, viz., No. 85, so of course the drachma is the same as in No. 82, viz., 3.41 grammes.
85.	Exact.	ROME, Old.	Mina.	545.73. This is the Roman minah, being the sixtieth part of 32,744 grammes (talent) in the usual way, or 8422 Troy, that is 20 ounces, which is described as in Pollux: Kahn's *Collections*, xiii, 751. The half of it still exists in the mark of Barcelona of 272.654 grammes, No. 88.
86.	Exact.	ATTICA, ITALIA, ENGLAND, EGYPT.	Mina.	Talent (divided by 75): 436.6 grammes or 9216 half chalci of Form 10. This is Fleta's libra mercatoria, and is the same as the mina of 16 ounces = talent of 32,744 grammes divided by 75, as alluded to in No. 83, but it is also the talent of 34,928 divided by 80. In No. 83 it is shown by Pollux in the way it was divided by the Romans between Hannibal's time and Nero's. In the present shape I show it as I presume the Anglo-Saxons divided it, and the 6750 Troy grains (see No. 18) represents it as the Normans divided it, taking it at 15 ounces instead of 16; but all these are alike in positive weights. See Forms 4 and 5 and note thereon, and Nos. 11 and 12.

	Error.	Place.	Weight.	Talent of 32,744 grammes.
87.	...	ROMAN, Old, and ALEXANDRIAN.	Mina.	545.7 grammes or talent of 32,744 divided by 60, which is, as Pollux says, 20 ounces (see No. 85). Taking 3456 chalci, or 1728 siliquæ or ceratia, to the pound, Form 10, this will give 144 siliquæ to the ounce, and as 20 ounces make the mina, then 2880 to the mina gives 8 drachmæ to the ounce, there would be therefore 160 drachmæ in the mina, and dividing the 2880 siliquæ by 160, it gives 18 siliquæ or ceratia to the drachma, *i.e.*, just what Pollux makes it when he says, "But the weight or drachma holds 18 ceratia, and others say 3 grammata." 6 siliquæ therefore went to 1 gramma. Of course this is the division of the pound into 96 drachmæ, each of 3.416 grammes, and 20 ounces would be 96 + 64, *i.e.*, 12 ounces + 8 ounces.
88.	Exact.	BARCELONA, 6912. Kelly, p. 27.	Marc.	272.65 grammes, 6912 half chalci of Form 10 (4207 Troy), 10 Roman ounces divided into 8 ounces of 192 adarmes of 18 chalci, or 36 half grains each.
89.	Exact.	FRANCE, 9216. Kelly, p. 133.	Poids.	de Marc, 489.5, one and a half Roman pounds, but divided sexdecimally into 16 ounces, 9216 grains or half chalci, Form 9 (7565 Troy grains). The mark consisted of 128 gros of 72 half chalci, and it was sometimes divided into 3 deniers of 24 half chalci. Half chalcus = .05311 grammes.
90.	Exact.	BASLE, 9216. Kelly, p. 28.	Poids.	Do.
91.	Exact.	BERGAMO. Kelly, p. 31.	Peso.	Sottile, 326.227 grammes. (Talent divided by 100.) Old Roman in 12 ounces. There is another pound of 30 of the same ounces, *i.e.*, 3 pounds of Barcelona, No. 81.
92.	Exact.	BILBOA. Kelly, p. 41.	Pound.	"Light" 489.5, the French poids de marc (see *ante*), No. 82, *i.e.*, a pound and a half old Roman.
93.	4 Troy grains out in ounce.	BOLSANO.	Pound.	"Light" (talent divided by 100): 330.633 (5103 Troy). The old Roman is 327.44.
94.	Exact.	CORSICA. Kelly, p. 80.	Pound.	Commercial old Roman pound and a half, 490.19 grammes, 9216 grains or half chalci, Form 9 (7,565 Troy), in 16 ounces.
95.	Exact.	CREMONA. Kelly, p. 81.	Pound.	327.6 or talent divided by 100. The old Roman pound.
96.	2½ Troy grains out in ounce.	LUNEBERG. Kelly, p. 245.	Pound.	A pound and a half Roman, 488.59 grammes, 8192 grains or half chalci, Form 9 (7540 Troy), divided into 16 ounces or 512 pfenings of 16 or 256 of 32 (see Hamburg, No. 23).

	Error.	Place.	Weight.	Talent of 32,744 grammes.
97.	Exact.	MILAN, 6912. Kelly, p. 255.	Libra.	Sottile (talent divided by 100) : 326.8 old Roman pound of Form 10, 1728 double chalci, or 6912 grains or half chalci (5044 Troy), divided into 12 ounces or 288 denarii of 24 half chalci.
98.	...	NEUFCHATEL Kelly, p. 269.	Poids.	Marc of 7555 Troy grains (see France, No. 82).
99.	Exact.	REGGIO. Kelly, vol. ii, p. 227.	Libra.	Talent (divided by 100): 329.921 Roman pound of 6912 (half chalci) grains (5092 Troy). See Milan, No. 90.
100.	4 Troy grains out in ounce.	ZELL. Kelly, p. 373.	Pound.	486.6 grammes, 9216 half chalci or grains, Form 9 (7511 Troy), one and a half of the Roman pound.
101.	Exact.	RUSSIA. Kelly, p. 301.	Pound.	(Talent divided by 80) : 409.3 grammes or 9216 half chalci, Form 14, divided into 96 solotnicks. 80 of these pounds of 327.44 (6318 Troy) make the talent.
102.	1 grain out in ounce.	MARSEILLES, 9216. Kelly, p. 252.	Poids.	The table (talent divided by 80): 407.95 grammes or 9,216 half chalci, Form 10 (6296 Troy), divided into 16 ounces of 128 gros.
103.	1¼ grains out.	SCOTLAND. Kelly, p. 309.	Pound.	Commercial, one and a half Roman pounds, 492.419 grammes, 7680 half chalci, Form 8 (7600 Troy), 16 ounces of 16 drops = 256 of 30 grains.
104.	Exact.	AMSTERDAM, 5120. Kelly, p. 9.	Mark.	or 9 ounces (Dutch Troy) of old Roman, 246.084, 5120 half chalci of Form 12, divided into 8 ounces, and the ounce into 20 engels or esterlins, and the engel into 32 azen or aas. It will be seen that the Scotch is virtually double this.
105.	Exact.	OLD HEBREW.	Talent.	40,930 grammes. This is 100 of the Russian pound *ante*, (No. 95). In the Latin version of Epiphanius it is thus spoken of: "Talentum super omnia pondera quibus alia appenduntur excellit. Exsistit vero cxxv librarum hoc autem ab Assyriis cepit dicunt enim quod Abraham in terram Chanaan hanc advexerat formam talenti autem centesima vicentesima quinta pars cxxv una libra est." If 40,930 grammes is divided by 125 it produces the Roman pound of 327.44 grammes. It is to be found in Petavius 183, and in Cleopatra's tables it is stated thus: "The talent holds 125 pounds of nomismata 9000." Now if the pound is divided as it was divided in the earliest times, and again at Constantine's time, into 72 nomismata, drachmæ, or denarii, then 125 × 72 will give the 9000 nomismata. In another place in

	Error.	Place.	Weight.	Talent of 32,744 grammes.
				Cleopatra's tables this mina is said to have 15 ounces and 90 drachmæ; now 15×27.28 (Roman ounce) does make the mina of 409.3, and this, if divided by 90, gives the drachma of 4.54 grammes, which is, of course, the drachma of the Roman pound ÷ 72, for 15 ounces is to 12 ounces as 90 is to 72. Again, if the pound was divided into 96 nomismata, there would be 12,000 of such nomismata of 3.41 grammes. Now the Hebrew shekel or weight was 4 drachmæ, or half the ounce when it contained 8 drachmæ or 96 to the pound instead of 72, so there would be 24 shekels in the Roman pound and 3000 in 125 pounds, which perfectly coincides with Genesis xxiv, 22; that passage states the kikkar or talent to be 3000 shekels; this was the "profane" talent, but the "talent of the sanctuary" was just double—see Ezekiel xlv, 2, where it is said to consist of 6000 shekels, *i.e.*, 81,860 grammes. Taking the calculations according to Form 16, the maneh would be 60 and the talent 6000 shekels.

The Common Syrian Talent of 32,109 *grammes.*

The identity of this is proved by certain weights recently found in Syria, and inscribed as "Demosion Hemimnaion". They are of brass, and the half-part weighs 535.15 grammes; *see* Longperrier in *Annals Instit. Arch.*, vol. xix (1847), p. 340. Multiplying this mina to find the talent 60 × 535.15, it gives 32109 as the talent.

	Error.	Place.	Weight.	Talent of 32,109 grammes.
106.	Exact.	CONSTANTINOPLE, 6400. Kelly, p. 377.	Checques	or Pound. (Talent divided by 100): 320.75 grammes or 100 drachms of 3.2075, 6400 chalci or 1600 Kharouba of 4 chalci of Form 16 (4950 Troy), divided into 10 ounces.
107.	Exact.	SMYRNA, 6400. Kelly, p. 315.	Checques	The same. 321.2 grammes.
108.	Exact.	NAPLES, 7200. Kelly, p. 264.	Libra.	(Talent divided by 100): 320.75 grammes, 7200 acini or half chalci (4950 Troy), divided into 12 ounces or 360 trapezi, 7200 acini, Form 16. This is evidently the Western division of the same Egyptian weight that we have above at Constantinople.

	Error.	Place.	Weight.	Talent of 32,109 grammes.
109.	Exact.	MAJORCA. Kelly, p. 247.	Rottolo.	Commercial (talent divided by 80): 400.026 grammes or 9000 half chalci, Form 16. This is 15 Neapolitan ounces, *i.e.*, the eightieth part of the talent of 32,075 grammes (or 495,000 Troy), divided into 12 ounces of 750 Neapolitan acini to the ounce (instead of 600) = 9000 of Form 10, as at Barcelona, below.
110.	$1\frac{7}{12}$ Troy grain out in ounce.	PATRAS. Kelly, p. 276.	Pound.	Talent (divided by 80), that is, 399.637. Practically the same as Majorca, and divided into 12 ounces of half chalci of Form 16 = 6168 Troy.
111.	1 Troy grain out in ounce.	BARCELONA, 6912. Kelly, p. 27.	Pound.	Commercial (talent divided by 80): same as Majorca, 400.63 of 9000 grains or half chalci, Form 16 (6174 Troy), divided into 12 ounces or 6912 half chalci, Form 10.
112.	$1\frac{7}{12}$ Troy grain out in ounce.	MODENA. Kelly, p. 258.	Pound.	Commercial (talent divided by 100): 319.5 grammes of 7200 grains or half chalci, Form 16 (4931 Troy), divided into 12 ounces.
113.	Exact.	GALICIA, Spain. Kelly, p. 150.	Pound.	Commercial, 576.122 grammes or 1800 drachms of 3.2005 or 115,200 half chalci, Form 16 (8892 Troy), divided into 20 ounces.
114.	Exact.	PERSIA. Kelly, p. 277.	Batman.	of cherray is 5751.22, being 1800 drachms of 3.195. This is divided into 6 rottols of 300 drachms, so it would consist of 115,200 half chalci of Form 16 (or 88,771 Troy).
115.	$1\frac{1}{4}$ Troy grains out in ounce.	PRAGUE. Kelly, p. 281.	Pound.	Commercial, 514.4 grammes, 160 of the drachm of 3.20 grammes, divided into 16 ounces or 7680 half chalci of Form 8 (or 7940 Troy).

In order to make the application of the tables and remarks therein more easy to understand, it is necessary to observe that though a drachma always consisted of 48 chalci, and was usually divided by the Greeks into 6 oboli, each of 8 chalci, yet sometimes a drachma was, according to Diodorus, Photius, and others, divided into 8 oboli of 6 chalci, so that a weight of 80 Attic drachmæ or 3840 chalci, or 7680 half chalci, Form 12, might be divided into 480 oboli of 8 chalci each, or into 640 oboli of 6 chalci each (that is, 960 hemioboli of 4 chalci each, or 1280 hemioboli of 3 chalci each); and the same weight would thus contain 240 units of 4 hemioboli of 4 chalci each, or 256 units of 5 hemioboli of 3 chalci each, or 256 of 30 half chalci, *i.e.*, the divisions of the 3840 and the 7680 would be made just as they are made at Leipsic, Berlin, Konisberg, Nos. 20, 24, 26, etc. These units are called denarii in

the entries in *Domesday Book* 'inter Ripam'. A drachma also contains 3 scruples. The Tower pound is 80 Attic drachmæ) see *post*) and the Troy pound is 80 drachmæ, each a fifteenth heavier than the Attic drachma. Such a weight can be divided into 8 solidi of 10 drachmæ, or into 10 solidi of 8 drachmæ, or into 12 solidi of 8 smaller drachmæ, *i.e.*, into 8 solidi of 120 hemioboli (mancus) with 8 chalci to the obolus = 8 solidi of 160 hemioboli of 6 chalci to the obolus, or into 10 ounces of 24 scruples, or into 12 ounces of 24 smaller scruples. If we allow 2 small solidi to each large solidus and to each ounce, we shall have in the 80 drachmæ 16 solidi of 60 hemioboli (15 dioboli), or 80 hemioboli (16×5 hemioboli of *three* chalci), 20 solidi of 12 scruples, or 24 solidi of 12 scruples of smaller grains: read denarii for scruples and dioboli, and there is the solution of the entries in *Domesday* 'inter Ripam' and the puzzle contained in Guthrum's Treaty. If the Troy pound was used in that Treaty, and the 80 Attic drachmæ consequently raised by one fifteenth, this addition could be carried out by adding $\frac{1}{15}$ to the weight of each grain in every unit composed of grains, or by adding $\frac{1}{15}$ in numbers to any one group of such units—viz., by raising the number of wheat grains from 30 to 32, keeping the weight of grains the same, or by raising the 16 solidi of 15 to 16 solidi of 16 (*see* Note to Form 12). In the entry in *Domesday* 'inter Ripam', the Mercian solidi are 16 of 16 of 30 grains of .0486 gramme, instead of 16 of 16 of 30 grains of .0455625; but in Guthrum's Treaty the unit itself is raised from 30 wheat grains to 32 of the same grains .0486, and the 16 solidi of 15 of 30 such grains become 16 solidi of 15 of 32 grains—*i.e.*, 48 sol. ex. v. scl. denariis, each denarius being 32 wheat grains (*i.e.*, the Troy penny of 24 Troy grains). That the words 'aureus' and 'solidus' were synonymous, see *Leges Agrariæ*, p. 323.

ATTIC DRACHMA, 4.373 GRAMME.

No. 1. (*Grammes* 349.87.) *Tower pound of* 5400 *Troy grains or* 80 *Attic drachmæ of* 4.373.

No. of Troy grs.	No. of gram.							
0.703125	.0455625	Wheat = ½ Chalcus of Form 12.						
1.40625	.091125	2 Chalcus.						
4.21875	.273375	6	3 Hemiobolus.					
8.4375	.54675	12	6	2 Obolus.				
21.09375	1.366875	30	15	5	2½ Denarius.			
84.375	5.4675	120	60	20	10	4 Thrimsa.		
337.5	21.87	480	240	80	40	16	4 Solidus or aureus.	
675	43.74	960	480	160	80	32	8	2 Two aurei or 10 drachmæ.
5400	349.92	7680	3840	1280	640	256	64	16 8 (Libra of 80 drachmæ.)

This is according to Forms 11 and 12. Equals 60 Thrimsæ of 5.832 grammes.

No. 2. (*Grammes* 349.87). *Tower pound. Decimal division into* 60 *Thrimsæ,* 80 *Attic drachmæ of* 4.373 *grammes.*

No. of Troy grs.	No. of gram.							
0 703125	.0455625	Wheat or half chalcus, Form 12.						
1.40625	.091125	2	Chalcus.					
11.25	.729	16	8	Obolus.				
22.5	1.458	32	16	2	Denarius (3=drachma).			
90*	5.832*	128**	64	8	4	Thrimsa**=120 of .0486 gramme.		
270	17.496	384	192	24	12	3	Solidus.	
5400	349.92	7680	3840	480	240	60	20	Libra (60 Thrimsæ).
			or					
90*	5.832**	128	64	8	4	Thrimsa (**= 120 of .0486).		
450	29.16	640	320	40	20	5	Solidus or uncia.	
5400	349.87	7680	3840	480	240	60	12	Libra (60 Thrimsæ).

This is according to Forms 11 and 12.

No. 3. (*Grammes* 349.87.) *Tower pound as above, Saxon division,* 80 *drachmæ of* 4.373 *grammes.*

No. of Troy grs.	No. of gram.							
0.781	.050625	Wheat 12 ½	Chalcus.					
3.124	.2025	4	Carat or Double Chalcus or Siliqua; *see* Form 10.					
9.372	.6075	12	3	Obolus.				
18¾	1.215	24	6	2	Penig or scruple.			
56¼	3.645	72	18	6	3	Drachma of 3·645.		
75	4.86	96	24	8	4	1⅓	Scilling or solidus.	
450	29.16	576	144	48	24	8	6	Ounce of 24 peninga.
5400	349.87	6912	1728	576	288	96	72	12 Libra of 96 drachmæ of 3.645 or 80 of 4.373.

This is according to Form 9. Equals 60 Thrimsæ of 5.832 grammes.

No. 4. (*Grammes* 373.2) *Troy pound* 80 *Eubœan drachmæ. Mercian sexdecimal division into* 64 *thrimsæ and into* 8 *oboli of* 6 *chalci each to the drachma. Troy grain* = .0648 *of a gramme.*

No. of Troy grs.	No. of gram.							
.75	.0486	Wheat grains or ½ Chalcus.						
1.5	.0972	2	Chalcus.					
4.5	.2916	6	3	Hemiobolus.				
22.5	1.458	30	15	5	Denarius.			
90	5.832	120	60	20	4	Thrimsa.		
360	23.328	480	240	80	16	4	Solidus or aureus (ora) denariorum.	
720	46.656	960	480	160	32	8	2	Mancus, "2 oræ denariorum" or 10 drachmæ.
5760	373.248	7680	3840	1280	256	64*	16	8 (Libra of 80 drachmæ of 4.6656).

This is according to Forms 11 and 12.

* *See* No. 5.

TROY POUND.

No. 5. (*Grammes* 373.248) 80 *Eubœan drachmæ of* 6 *oboli of* 8 *chalci to drachma. Troy grain* =.0648 *gramme. Treaty division between Alfred and Guthrum*

No. of Troy grs.	No. of gram.						
.75	.0486	Wheat grain or ½ Chalcus of Form 12.					
1.5	.0972	2	Chalcus.				
12	.7776	16	8	Obolus.			
24	1.5552	32	16	2	Denarius or penny.		
120	7.776	160	80	10	5	Solidus "ex 5 scil. denariis"; *see* Treaty.	
720	46.656	960	480	60	30	6	Mancus or 10 drachmæ.
5760	373.248	7680	3840	480	240	48	8 (Libra of 80 drachmæ of 4.6656).

Equals 64 thrimsæ of 5.832 grammes; so that in the Ceorls "were" of 4 pounds and 40 pence of this division there are 266⅔ thrimsæ. (*See* Guthrum's treaty set in my paper in vol. i, *Domesday Studies*.)

No. 6. (*Grammes* 373.248) 80 *Eubœan drachmæ decimal division into* 6 *oboli of* 8 *chalci to the drachma. Troy grain* = .0648 *gramme.*

No. of Troy grs.	No. of gram.							
.75	.0486	Wheat grain or ½ Chalcus of Form 12						
1	.0648	1⅓	Troy grain.					
1½	.0972	2	1½	Chalcus.				
12	.7776	16	12	8	Obolus.			
24	1.5552	32	24	16	2	Diobolus or penny.		
120	7.776	160	120	80	10	5	Solidus "ex 5 scil. denariis"; *see* Treaty.	
480	31.104	640	480	320	40	20	4	Aureus, solidus, or "ora de viginti in ora" or ounce.
720	46.656	960	720	480	60	30	6	1½ Mancus or 10 drachmæ.
5760	373.248	7680	5760	3840	480	240	48	12 8 Libra or 80 drachmæ of 4.6656.

Equals 64 thrimsæ of 5.832 grammes.

No. 7. *Roman, Anglo-Saxon, or Duodecimal divisions.* (*Grammes* 373.248) 80 *Eubœan drachmæ of* 4.6656 = 96 *drachmæ of* 3.888, 6 *oboli of* 3 *carats to drachmæ.*

No. of Troy grs.	No. of gram.								
5/6	.054	Wheat ½ Chalcus of Form 10.							
3⅓	.216	4	Carat.						
10	.648	12	3	Obolus.					
20	1.296	24	6	2	Diobolus, scruple, penny.				
60	3.888	72	18	6	3	Drachma.			
120	7.776*	144	36	12	6	2	* "Solidus or sicilicus ex 5 sch. denariis"; *see* decimal division above.		
480	31.104	576	144	48	24	8	4	Aureus, solidus, or "ora de viginti in ora" = ounce.	
720	46.656	864	216	72	36	12	6	1½ Mancus or 12 drachmæ.	
5760	373.248	6912	1728	576	288	96	48	12	8 Libra or 96 drachmæ of 3.888 = 80 drachmæ of 4.6656.
A		B							

Column A is the same as Apothecaries' weight, being the same as B, but with half chalcus or Troy grain of 0.648 instead of the half chalcus Form 10, .054, the latter being ten-twelfths of the Troy.

It is thus absolutely necessary, as stated in my paper in vol. i, to have a correct understanding of the difference in number and weight of the primary units which lie at the base of any given ounce or pound, whatever name such units may bear. In the East, at Constantinople the Kharouba (carob, siliqua, or carat) of .20108 gramme consisted of 4 wheat grains or half chalci, each of .05027 gramme, and at Tripoli and Bassora the Kharouba of .1944 gramme consisted of 3 Troy grains or half chalci of .0648 gramme each: supposing, however, the Kharouba at Tripoli and Bassora to have equalled 4 wheat grains as at Constantinople, then the Tripoli wheat grain or half chalcus must have been .0486 gramme, being the identical wheat grain (or $\frac{1}{2}$ chalcos of .0455625 + $\frac{1}{15}$ of it: see below (of the Mercian pound or double mark of 7680 such grains). (See vol. i, p. 233.) The wheat grains of the Troy pound are said in the Statute of Edward to be "medio spicæ", those of the Tower pound are in Fleta, Book ii, c. 12, said to be "mediocria".

The Roman unit, siliqua, or carob, consisted of 4 half chalci, and the half pinginn consisted also of 4 half chalci, whatever their respective weights might have been.

We know as an absolute fact that the Tower pound is 5400 Troy grains, and that the Troy grain is .0648 of a gramme; the weight, therefore, of the Tower pound is 349.92 grammes; the Troy pound we also know to be 5760 Troy grains (that, is 373.248): the difference between the two pounds, therefore, is one *fifteenth*, the Tower pound being 349.92 grammes.

Hultsch (p. 705), as I have said, gives the weight of the *Attic drachma* at 4.366, which would therefore consist of 48 chalci of .091 each, or 96 halves of chalci of .0455 gramme. Taking *ten* drachmæ to an *ounce*, we shall have an ounce of 43.66 grammes, consisting of 480 chalci or 960 halves of chalci. Taking again 8 of these ounces, we have 3840 chalci or 7680 halves of chalci of .0455 gramme and an Attic 'mark' of 349.28, being, with a difference of only 10 grains (Troy), an amount so near to the Tower pound of 349.98 as to justify an assumption that the Attic 'mark' and the Tower pound are identical. This mark of 8 ounces of 43.66 each would therefore equal 16 ounces of 21.83 of 480 halves of chalci each, or 12 ounces of 640 halves of chalci each (=29.16).

Assuming, then, that the ounce of the Tower pound of 5400 Troy grains (which equal a 'mark' of 8 ounces of 10 Attic drachmæ each) was really the ounce of the Anglo-Saxon pound, as it certainly is that of the Cologne and other Teutonic weights mentioned below; and assuming also that the Saxons had the same *divisions* as the Romans and the Irish, as suggested in vol. i. pp.

239, 240, in the paragraph headed 'The Libra and Mercian Mark'; then the Saxon penig would have contained *before* the treaty with Guthrum 24 half chalci, Form 10, of .050625 gramme each, or 20 of .06075 half chalci, Form 8—*see* entries marked D in Tower pound, table *ante* (=18¾ Troy of .0648 gramme, as stated at p. 237), and *after* the treaty (and after this Tower pound for the purpose of the treaty had been raised a fifteenth—that is, from 5400 Troy grains to 5760 Troy grains), would have contained 20 Troy grains (*see* E), six of which would amount to the five denarii which made the treaty shilling, each denarius being 24 grains Troy of .06492 gramme = 32 wheat grains of .0485 gramme, and the *treaty* pound (*i.e.*, the Troy pound) would thus be divided duodecimally by the Anglo-Saxons as in Apothecaries' weight, while the Normans would divide it decimally as in Troy weight, and the Mercians sexdecimally as in the valets of the land 'inter Ripam', at page 248, vol. i. (*See* Tables, *ante.*)

As it is not reasonable to suppose that a weight would be subdivided originally in such a way as to produce a fraction of its primary unit, we may safely conclude that where a subdivision does so produce a fraction it is a subdivision brought about by the adoption of another and different weight. The marks of 8 ounces and 16 halves of ounces (or two thirds of 12 ounces) would represent in the duodecimal system 192 and 384 pence or units, and in the decimal system 160 and 320: but sometimes these marks were themselves divided duodecimally and decimally; for instance, the Attic 'mark' of 8 ounces divides duodecimally up into the Tower pound, and the Mercian mark of 16 solidi divides decimally into the Troy pound as well as duodecimally, as shown above.

As the Attic drachma of 4.3665 (see *ante*), the Tower pound of 5400 Troy grains (equalling 80 of such drachmæ), the chalcos of .091125, the ½ chalcos of .0455625, the wheat grain of .0486, the Troy grain of .064792, are all thoroughly identified, there is very strong ground for thinking (as stated in my paper in vol. i) that there existed in England *before* the advent of the Saxons a weight divided sexdecimally (*i.e.*, 16 × 16 × 30, or 7680 grains); that such grains were halves of chalci of .091125= .0455625; that this weight was the Tower pound divided afterwards by the Anglo-Saxons duodecimally instead of sexdecimally; and that, being 16 × 16 × 30 of .0455625, it equalled *fifteen* ounces of 16 pence of 30 wheat grains of .0486, and that this weight was at the treaty of Guthrum raised $\frac{1}{15}$ (that is, from *fifteen* ounces to

sixteen ounces of such last-mentioned grains) and became what I call the Mercian pound or mark of $16 \times 16 \times 30$ halves of chalci, or wheat grains of .0486 gramme $= 12 \times 24 \times 20$ of .0648 (Troy grains) $= 12 \times 20 \times 24$ of the like grains. The Troy grain is really .064792 but I have taken it as .0648.

The important question remains behind: Did the Saxons when they came to England bring this Attic 'mark' with them, or did they find it here and divide it according to their system duodecimally? For the reason given in my paper in vol i, I think they found it here, and that binary or sex-decimal divisions as contained in the Attic mark were in use among the British in accordance with the like divisions of the land used by Dyvnmal before the Saxons 'obtained the crown of London and the supremacy in England'. The following are the grains or units in grammes: Troy, chalcos, .129584, ditto, .0972, the halves of which are respectively .064792, and .0486 (this last being the wheat grain of Edward's statute).

I cannot conclude this paper without adding a list of the differently sized acres in England; they arise, of course, from the adoption of different-sized feet, expressed by me in mètres. (*See* next page.)

The statute foot is .3048 m. and sesquipedales cubit .4752 m., the half of which is the span of .2286 m. or old British 'foot', on which the pre-Saxon measures are founded. This 'old British foot' is nine statute inches.

The Continental 'Arpents', etc., have not long furrows like the above measure, but are built up on the lines of the 'plethra', 'jugera', and 'hæredia'.

Six × 60 poles of feet in number $\frac{1}{3}$ less than the numbers in column P, $= 4 \times 40$ rods of sesquipedales cubits of that column: thus the statute acre of $4 \times 40 \times 16\frac{1}{2} = 6 \times 60 \times 11$; but they sometimes treated a rod as 'bipedalis': thus $3 \times 30 \times 22 = 6 \times 60 \times 11$: the statute acre in Jersey is so measured (Appendix Gov. Rep. of 1820, p. 26), and is in fact $3 \times 30 \times 24$ of the foot of .2794 m. This might prove a fertile source of error to those who suppose that an acre is necessarily built up of 4×40 of any named rod. So, too, the Devonshire acre is 90 square perches 20 statute feet long (*i.e.*, $3 \times 30 \times 20$) and the West Somerset is 108 (90 Anglico numero), of the like square perches (*i.e.*, $3 \times 36 = 20$). The whole subject of measures and weights deserves a considerable deal more attention bestowed on it than at present it has received, as they are not the result of modern invention, but, on the contrary I should imagine, of very remote times.

Name of Acre.	Stat. yards.	Poles.	Feet.	Foot.[1]	
			P.		
Battle Abbey	4551$\frac{1}{6}$	4×40	16	.3048	This solves the difficulty stated at p. 273 of *Domesday Studies.*
Do. Norman Measure (pied du roi)	4551$\frac{1}{9}$	4×40	15	.325	
Statute (20.1168 m.×201.168 m.)	4840	4×40	18	[1].2794	[1] This is the Jersey foot.
Normandy	9740$\frac{1}{2}$	4×40	22	.325	
Ib.	9740$\frac{1}{2}$	4×40	20	.357	
Irish Plantation, Welsh, Westmoreland, Cumberland, Guernsey, Lancashire, Northumberland, Yorkshire, Derbyshire (Hunts ?)	7840	4×40	18	.3556	
Wales	11776	4×48	20	.357	
Cheshire, Staffordshire, Yorkshire, Leicestershire, Wales, Ireland	10240	8×80	16	.2286	
Merionethshire...	2430	3×40	18	.2286	
Anglesey, Somerset, Hants, Oxfordshire, Hereford, Cardigan, Montgomery, Brecknock, Radnor, Sussex A	3240	4×40	18	.2286	
Irish (4 times A)	12960	4×40	36	.2286	
In stat. cubits	12960	4×40	18	.4572	
North Wales	4320	9×30	16	.2286	
Cornwall, Wilts, Devon, Lancashire, Wales	5760	6×60	16	.2286	
Royal Forest (Sherwood)	25000	10×100	20	.2286	
Devon arable, add ? *once all over England*...	4000	4×40	20	.2286	
West Somerset	4800	4×48	20	.2286	
Lancashire	9000	6×60	30	.2286	
Dumbarton	6084	4×40	18	.3132	
Scotch	6104	4×40	18	.3138	
Scotch	6150$\frac{2}{6}$	4×40	18	.3148	
Lincolnshire	6050	4×40	18	.3123	
= *Hæredium* or 2 jugera	6050	20×20	12	.2963	
Cunningham	6250	4×40	18	.317	
Ireland	14951$\frac{1}{9}$	6×60	20	.2942	
Wales	9384	4×40	20	.350	
Wales	11264	4×48	20	.350	
Leicestershire	2308$\frac{3}{4}$	2×40	16	.307	
Sussex (Osnaburg)	3327$\frac{1}{2}$	4×40	15	.279	110 poles.
Dorsetshire (Amsterdam)	4053$\frac{4}{9}$	4×40	15	.3067	134 poles.
Sussex (Bremen, etc.)	6412	4×40	20	.289	212 poles.
Sussex and Hampshire	5445	6×60	12	.2963	180 poles.
Sussex and Hampshire, $\frac{5}{8}$ of it *short* acre ...	3025	10×20	12	.2963	Jugerum 100 poles.
Sussex and Wiltshire, $\frac{6}{9}$ *short* acre	3630	12×20	12	.2963	120 poles.
Sussex	3932$\frac{4}{6}$	4×40	15	.3026	130 poles.
Irish forrach measure and Russian dessetina	13066$\frac{2}{3}$	12×72	12	.2963	
,, ,, ,, ,,	13066$\frac{2}{3}$	10×60	12	.3553	
,, ,, ,, ,,	13066$\frac{2}{3}$	10×60	14	.3048	

[1] Foot in decimals of a mètre.

O. C. Pell.

TOTEMISM IN BRITAIN.

II.

(*Continued from p. 242.*)

(*h*) *Assumption of Totem Dress.*

MR. FRAZER says that (i) "in order to put himself more fully under the protection of the totem, the clansman is in the habit of assimilating himself to the totem by dressing in the skin or other part of the totem animal." Among the examples he quotes may be mentioned the Minnilarees, who on going to battle dress in wolf-skins, the skin with the tail attached hangs down the back, the man's head being inserted in a hole in the skin, the wolf's head hanging down upon the breast. Amongst the Thinklets on solemn occasions, such as dances, festivals, burials, etc., individuals appear in the full form of their totem-animals.[1] (ii) The North American Indians and others tattoo their totems on their persons; (iii) others paint their totem-marks on weapons, huts, canoes, etc.; (iv) others paint or carve the totem on their clansman's tomb or grave post, and sometimes the stuffed skin of a totem is hung over the grave or placed at the dead man's side.

The well-known passages which refer to the tattooing practices of the early tribes in Britain specially refer to animal figures. Thus the Caledonians and other Picts were tattooed with divers kinds of figures and animals. Cæsar mentions the custom among the Southern Britons, and Solinus says of them that they were marked with the figures of different animals.[2]

To collect together all the customs where animal skins are used as a disguise, or as a part of the traditional costume for the performance of certain ceremonies, is no light task, but at all events, when they are thus brought together, and when an explanation for the strange practice is asked, there does not seem any more fitting explanation

[1] Dormer, *Primitive Superstitions*, 249-253, describes some of these assumptions of the animal form by means of dress.

[2] [Ammianus Marcellinus, *Mon. Hist. Brit.*, p. lxxiii; Eumenius, *ibid.*, p. lxix; Herodian, *ibid.*, p. lxiv; Solinus, *ibid.*, p. x; cf. *Universal History, Ancient*, vol. xiv, p. 75]; Forbes Leslie, *Early Races of Scotland*, ii, 374.

than that they are survivals of old clan festivals, which took place when the clans were totem-clans.

Cæsar notes that the Britons at battle time dressed themselves in the hides and skins of animals. Faustinus the bishop inveighs against the people roaming about in disguises resembling the figures of wild beasts—"alii vestiuntur pellibus pecudum, alii assumunt capita bestiarum, gaudentes et exultantes, si taliter se in ferinas species transformaverint ut homines non esse videantur."[1] Survivals of this general custom still appear in the rural parts of the country. Dr. Johnson, when staying at Coll on New Year's day, relates that "one man dressed himself in a cow's hide upon which other men beat with sticks: he runs with all this noise round the house, which all the company quits in a counterfeit fright." Dr. Plot relates that at Pagets Bromley, in Staffordshire, "a man came along the village on twelfthday with a mock horse fastened to him, with which he danced, at the same time making a snapping noise with a bow and arrow. He was attended by half-a-dozen fellow villagers, wearing mock-deer's heads, and displaying the arms of the several landlords of the town."[2] The curious ceremony of the "fool plough", seems as used at present, says Brand, "a composition made up of the gleaning of several obsolete customs, followed anciently here and elsewhere on this and the like festive occasions".[3] This feature of modern custom is very important to observe; because it not only supplies an explanation of the means adopted for the preservation of ancient ritual, but it meets the objection which might be raised, that it is not correct to pick out one characteristic of a local festival, and, in using it for present purposes, detach it from its surroundings. We now know that modern local ceremonial custom partakes of the nature of a patchwork pieced together from various sources at various times to meet the necessities of a popular traditional demand for periodical festivals. From this traditionally formed patchwork we may note some important items. The representative of the fool in the ceremony of the fool plough was "almost covered with skins, a hairy cap on, and the tail of some animal hanging from his back." He was called "Captain Cauf's tail", and in Yorkshire his tail was "a genuine calf's tail".[4] This custom obtains in Derbyshire with a calf's tail,[5] in Lincolnshire with a fox's tail.[6] Some of the features of the rustic

[1] [Serm. in Kl. Jan, *vide* Du Cange, v. Cervula]; Ellis's *Brand*, i, 515.
[2] *History of Staffordshire*, p. 434.
[3] Ellis's *Brand*, i, 506.
[4] *Ibid.*, i, 505-511.
[5] *Journ. Arch. Assoc.*, vii, 202.
[6] Dyer, *Brit. Pop. Customs*, 42.

sword dance of Northumberland are similar to this, "one of the company is distinguished from the rest by a more antic dress; a fox's skin generally serving him for a covering and ornament to his head, the tail hanging down his back".[1] Morris dancers in the southern parts of Gloucestershire consisted of eight men variously decorated. Two of them danced alone: one wore a light yellow dress and a narrow leather girdle, on which, in the middle of his back, was fixed a bell like a sheep-bell, and he carried the long hair of a cart-horse's tail fixed to a short handle; the other was a man in female attire.[2]

I would connect with these practices a remarkable custom of initiation into chiefship recorded by early writers in Ireland. Mr. Frazer notes that when a Hindu child's horoscope portends misfortune or crime, he is born again from a cow by being passed between the hind-legs of a cow forward through the fore-legs, while a South Slavonian child is drawn through a wolf-skin.[3] The fiction of being born again when elected chieftain is noted by Mr. Morgan (*Ancient Society*), and the fiction would originally have been accompanied by the practice.

"There is in the northern and most remote part of Ulster, namely, at Kenel Cunil, a nation which practises a most barbarous and abominable rite in creating their king. The whole people of that country being gathered in one place, a white mare is led into the midst of them, and he who is to be inaugurated, not as a prince but as a brute, not as a king but as an outlaw, comes before the people on all-fours, confessing himself a beast. The mare being immediately killed and cut in pieces, and boiled, a bath is prepared for him from the broth. Sitting in this, he eats of the flesh which is brought to him, the people standing round and partaking of it also. He is also required to drink of the broth in which he is bathed, not drawing it in any vessel, nor even in his hand, but lapping it with his mouth. These rites being duly accomplished, his royal authority and dominion are ratified."[4]

[1] Ellis's *Brand*, i, 514; cf. Wallis's *Hist. Antiquities of Northumberland*, ii, 28; Hutchinson, ii, 45.

[2] *Proc. Soc. Antiq.*, iv, 266.

[3] *Totemism*, 32, 33. Cf. initiation ceremonies on p. 47.

[4] Giraldus Cambrensis, *Topography of Ireland*, cap. xxv. Campion, in his *Historie of Ireland*, describes the ceremony, but instead of a white mare says a white cow is used. Cf. *Ulster Journ. Arch.*, v, 216-35, where the ceremony is very ably, though not to my mind conclusively, explained as a misinterpreted version of a ceremony which is observed in Carinthia, and which has for its object the humbling of the candidate before he is made king. See also Elton's *Origins of English History*, 176.

This practice has been disputed by many who have not understood its relationship to other customs of the Irish. It is no more barbarous or extraordinary than the totem-clan Coneely with its connection and descent from the Seal; and it is to some extent paralleled by other practices to be met with in various parts of Great Britain.

Even when they began to wear armour, their helmets had horns of metal joined to them, or the shapes of birds and beasts carved upon them.[1] A passage from Tacitus may be quoted to show that images of wild boars were worn as a charm against the dangers of war: "matrem deûm venerantur: insigne superstitionis formas aprorum gestant. Id pro armis omnique tutelâ: securum deae cultorem etiam inter hostes præstat."[2] Beowulf also contains allusion to the practice in the following lines:

> "They seemed a boar's form
> to bear over their cheeks" (i, 604).
>
> "Then commanded he to bring in
> the boar, an ornament to the head,
> the helmet lofty in war" (i, 4299).

and Mr. Kemble tells us that swine among the Germans and the Anglo-Saxons were sacred animals.[3] The boar was, in fact, sacred to Freya, and the bearing or wearing a figure of the animal was considered to propitiate the goddess, and place the wearer under her special protection. Archæological discoveries confirm the testimony of folk-lore. A curious bronze was found in Banffshire, fashioned entirely after the similitude of a boar's head.[4] At Torrs, in Galloway, was found a singular bronze helmet having two long horns turning backwards like those of a goat, and when held on the face it is possible to see through the two round openings or eye-holes.[5] In the British Museum is a bronze head-piece found in the Thames near Waterloo Bridge; from each side of this helmet projects a conical horn. A bronze shield found in the river Witham had the figure of an animal attached to it by rivets.[6] It is curious to compare these with the figures on some bronze plates found in Œland and figured by Mr. Du Chaillu in his *Land of the Midnight Sun* (i, 371). Two of these have for their crests the complete figure of a boar; and of two others, one has his head encased in a

[1] Diodorus, lib. v, cap. 2.
[2] *De mor. Germ.*, lxv.
[3] *Horæ Ferales*, 68.
[4] *Proc. Soc. Antiq. Scot.*, vii, 342, 347.
[5] *Ibid.*, 335, 340; Anderson, *Scotland in Pagan Times*, 113.
[6] Kemble, *Horæ Ferales*, plate xiv.

metal boar's head with eye-holes on either side, while his opponent is crowned with a large pair of cow's horns.[1]

The tabulation of this section repeats the following totems:

(16) Fox. (18) Swine or boar.
(17) Horse. (22) Cow.

and introduces as a new totem:

(34) Deer.[2]

(*i*) *Assumption of the Totem Name.*

Many of the names of the early Irish kings are pure totem-names. Thus we have *Con*gall, the white or brilliant hound; *Con*airy Mor, *i.e.*, *Con*-a-righ, the royal hound; *Cu*roi, the hound king; *Con*cobar, the foaming hound; *Cu*culain, the hound of Culain; *Con*aill, the noble hound; *Cu*corb, the chariot hound; *Con*laoch, the hound's whelp, and others of the like class, says Mr. O'Grady, "too numerous to mention".[3] Another name of an Irish king is "Cairbar of the Cat's head".[4] Fynes Moryson the traveller notes in the seventeenth century that Monaghan was inhabited by the MacMahons, that is, he says, the sons of bears.[5] There were tribes known as Griffins by the Shannon, Calves in the country round Belfast, and Wild Red-deer in Ossory, and the evidence is so conclusive as to the two first, that Professor Skene is induced to observe that "it would seem that the tribes took their names from these animals".[6] On some Ogham-inscribed stones found at Drumloghan, county Waterford, Mr. Brash noticed the frequent occurrence of the tribe named "Muc", *i.e.*, the boar, and he traces it in other places, and concludes that it is "evidently the name of a tribe very widely diffused from the extremity of the county of Kerry to that of Waterford, and found also on a monument at Placus, county Cork." Observing that other tribe-names occur by the side of Muc the boar, this is an exact description of the local expansion of a totem tribe.[7]

[1] Mr. Anderson reproduces the letter in his *Scotland in Pagan Times*, 116.

[2] On the deer as a totem, *see* Frazer, *lib. cit.*, 11.

[3] Standish O'Grady's *History of Ireland*, i, 186, 187. *Con* = hound, nom.; *cu* = genitive.

[4] *Dean of Lismore's Book*, by McLaughlan, p. 76.

[5] *Hist. of Ireland*, ii, 364.

[6] Skene, *Celtic Scotland*, i, 206; Elton's *Origins of English Hist.*, 298; O'Curry's *Manners of Anc. Irish*, ii, 208.

[7] *Royal Irish Academy*, x, 113, where a list of the place-names connected with "boar" is given. Of Irish place-names derived from animals, see a curious paper in the same volume, pp. 169-172. The occurrence of the dual form is the particular feature there noted.

It seems a natural conclusion to draw, with the evidence of the clan Coneely before us, that these names must be survivals of totem-names. However the characteristics of animals might lend themselves to name-giving in some cases, they would scarcely develop into a system so extensive as these instances indicate. With reference to the more prevalent name from "con", a hound or dog, Mr. O'Curry states "that the Concheannaich, or Dogheads, were an ancient race who inhabited Magh O'Coinn-chinn, now Moygoniby in Kerry."[1]

In Scotland there were several totem-named clans. The clan Chattan (probably an offshoot of the Catti), who gave their name to the county of Caithness, bore as their chief cognizance the wild mountain cat, and called their chieftain, the Earl of Sutherland, *Mohr an Chat*, the Great Wild Cat.[2] This district is mentioned in the *Irish Nennius* as being conquered by the Cruithnians.—

> "From thence they conquered Alba,
> The noble nurse of faithfulness,
> Without destroying the people or their houses,
> From the region of Cat to Forcu."

One of Cruthne's seven sons was Caith, or Cat.[3] An early Gaelic poem mentions the "Cat" tribe and the "Dog" tribe in the following significant lines:

> "When three battalions were seen,
> Sons to the King of Rualay,
> Cat-headed one battalion was,
> Dog-headed was the one beside it.
> * * * *
> The whole of the Cat-heads were killed,
> The Dog-heads were seized to a man."[4]

In the same district of Caithness also appears the names Hund, or hind, as a chief's name.[5]

In a part of Ross-shire there is a district known by the name of Edderdail, or the territory of the Adders. The early mormaers of the territory of Buchan bore the name of MacDobharcon, or the sons of the Otter. Mr. Skene suggests that the Lugi and Mertæ of Ptolemy, who inhabited modern Sutherland, are the Calves and the Heifers.

The early Welsh poems furnish some examples which have been noted by Mr. Elton. Thus, the tribes who fought at Cattraeth are

[1] *Dean of Lismore's Book*, p. 76, note 2.
[2] Millington's *Heraldry in History, Poetry, and Romance*, p. 103.
[3] *Irish Nennius*, p. 149. [4] *Dean of Lismore's Book.*
[5] *Irish Nennius*, note, p. lxxxiii.

distinguished as wolves, bears, or ravens ; the followers of Cian the Dog, are called the dogs of war, and the chieftain's house is described as the stone or castle of the white dogs.[1]

Many attempts have been made to explain the name of the Isle of Man ; but by far the most scientific is that by Mr. J. M. Jeffcott, who traces it to a totem origin. Mr. Jeffcott first very properly suggests that the name is most probably derived from the tribe of people who first inhabited the island, namely, the Manninee, and he connects this tribe-name philologically with Monapia, Monavia, Mevania, Menavia, Manavia, Menapia, and Menevia, all tribe-names. Among these are to be recognised the Menevii of Britain, the Menapii of Ireland, from whom the Manninee may have migrated, and colonised the island. But whether this be the true tribe-origin of the original Manx population, there is no doubt that the name Manninee denotes the tribe or clan of the kid or fawn. The word Mannan = kid or fawn, exists in the Erse and Britannic dialects and in other tongues.[2]

I now wish to turn to the evidence by which the Teutonic invaders of this country have been shown to possess traces of totem-named stocks. The leaders of the first invaders, Hengist and Horsa, are the stallion and the mare. Many of the places connected with the conquest have, says Mr. Grant Allen, " names compounded with the word, as at Horstead, Horstedkeynes, Horsham, and Horsley. The progress inland of the West Saxons seems to be marked by the white horses cut into the chalk downs of Wantage and Westbury. The final victory of Ecgberht over the West Welsh or Cornish was won at Hengestesdun in Cornwall, now Hengston, that is to say, horse down, whence the surnames Hingeston and Hingston. The sons of the Horse, or the Horsings, though no mentions occurs of them in our documents, have left their mark at two places called Horsington, one in Lincolnshire and the other in Somerset."[3]

Such a record is clearly indicative of a racial custom of some importance, and it is hard to suggest any explanation more conclusive than that of the totem-theory. If we pursue investigation further, other totemistic names are equally forthcoming. The son of Hengist was named Æsc, or the Ash, taking his name doubtless from the tribe of his mother, as in strict totem society. One of

[1] Aneurin's *Gododin*, 9, 21, 30 ; Elton's *Origins of English History*, 299.

[2] *Manx Miscellany*, xxx, 16.

[3] *Cornhill Magazine*, September 1881, p. 333. Cf. Plenderleith's *The White Horses of the West of England.*

Mr. Kemble's charters contains a mention of certain other Æscings besides those of Kent, namely in Surrey,[1] and, says Mr. Grant Allen, the clan has left its name at Ashendon in Bucks.[2] The Surrey Æsc is now the modern town of Ash, and there are towns bearing the name of Ash in Derby, Durham, Shropshire, Somersetshire, and Suffolk. Similarly, the Æscings no doubt left their totem-name to Ashengdon in Essex, Ashington in Northumberland, Somersetshire, and Sussex. The Berings, or sons of the bear, mentioned in another charter, have perhaps stamped their name upon four spots called Berrington in Durham, Gloucester, Shropshire, and Worcestershire. The Buccings, or sons of the Buck, have made themselves a home at Buckingham. The Boccings, or sons of the Beech, still survive at Bocking in Essex and Suffolk. The Birchings (Bercings), or sons of the Birch, left their name to Birchington in Kent. The Wolfings are mentioned in the charters, and their name appears in the personal cognomens of Saxon heroes, though not in place-names. Mr. Lower has advanced a theory that these names were given to the destroyers of wolves[3]; but, as Mr. Ellis has pointed out, this is hardly satisfactory, for "how is it that the killers of the fox, badger, deer, are not equally or more numerous?"[4]

These are some of the best specimens of the totem-named tribes of Anglo-Saxon Britain, besides which Mr. Grant Allen mentions the sons of the Worm at Wormingford in Essex, Wormingshall in Bucks, and Wormington in Gloucester; the Thornings, mentioned in a Kentish charter, and also located at Thornington in Northumberland; the Sunnings, or sons of the Sun, represented at Sonning, Sunninghill, and Sunningwell in Berkshire; the Fearnings in Hampshire, from the Fern, represented by Farningham in Kent; the Earnings and Ernings, named in two of the charters, and meaning sons of the Earn or Eagle; the Beardings, the sons of the Hawk or Buzzard; the Ceanings, of the Pine or Fir; the Heartings of the Hart; and the Hanings, of the Cock.

This practically is Mr. Grant Allen's contribution to this interesting subject, and Mr. Lang seems inclined to accept the evidence.[5] Of course there are some arguments to be advanced against it; and Mr. Isaac Taylor[6] and Mr. Edmund McClure[7] have already stated what these arguments are. But if we believe with the former (as we must do), that such a name as Sandringham gives

[1] *Codex Diplomaticus.* [2] *Cornhill, ut sup.* [3] *English Surnames*, p. 11.
[4] *Antiquities of Heraldry*, p. 108. [5] *Custom and Myth*, p. 265.
[6] *Athenæum*, Feb. 21, 1885. [7] *Ibid.*, March 7th, 1885.

us "the home of the men who lived on the Norfolk sands",[1] and if we remember such instances as the Wilsætas, the men who settled on the Wiley, the names being obtained from the locality, are we therefore to be compelled to carry this theory on, and conclude with Mr. McClure that the Æscingas, Bircingas, Buccingas, Fearningas, Thorningas, Steaningas, denote the men from the Ashes, the Birches, the Beeches, the Ferns, the Thorny District, and the Stony District?

This theory seems to me almost impossible, especially as there is no reason to suppose that these districts were specially devoted to the cultivation of one class of tree, and they do not account for the animal names. But we may give a little consideration to the primitive system of nomenclature. Lewin says that "the Khyoungtha are subdivided into clans, mostly taking their names from the different streams on which they live."[2] The names of the Australian tribes are taken from some local object, or from some peculiarity in the country where they live.[3] In the Panjab "the Sikh clan-divisions derive their names from places and things".[4] In the Montgomery district of the Panjab "the permanent encamping grounds are known by the names of the tribes to whom they have belonged for generations".[5] Here, on the one hand, we have tribes named "from places and things", and on the other, places named from the tribe. How these two systems are reconciled may be seen by turning to evidence which can afford us a glimpse of tribes in motion and in process of carrying on a system of colonisation such as we might suppose went on in England at the time of the Teutonic invasion. In the Thelum district of the Panjab we have such evidence. There "the tribe may be watched breaking up into villages, and the villages disseminating the germs of fresh village colonisation", and here it is that we find the "original villages are always called by some definite name", but the new villages are generally called "after the head cultivator, or are known by the name of a caste."[6]

Now, applying this evidence to that obtainable from England, we may perhaps reach a point from which, at all events, we may

[1] It should, however, be noted that McLennan has shown that sand is a totem among the American Indians, *Fortnightly Review*, xii, 413; and *see* Frazer, *lib. cit.*, 25.

[2] *Wild Races of S.E. India*, 93.

[3] Dawson's *Australian Aborigines*, p. 1.

[4] Tupper, *Punjab Customary Law*, ii, 30.

[5] *Ibid.*, 25.

[6] *Ibid.*, 28, 29.

proceed to ask whether it indicates the advisability of undertaking further research. Mr. Seebohm, rejecting altogether the totem-theory, has forcibly argued that the names to which the peculiar suffix *ing* was added, were personal names, and not family or clan names.[1] But this they must have been if they formed part of totem-named clans, each clan, as we know, containing members of several different stocks. And that personal names formed such a small proportion of the Anglo-Saxon place-name system is in direct accord with what, judging by the Indian evidence, might have been expected. A few great leaders, bearing their old totem-names, separated from their local clans, and probably, but not necessarily, taking with them those of their own stock, founded new settlements, which were named after the leader, or, as we have known him from the Panjab example, the head cultivator.

It may be gathered from this that the few place-names formed from patronymics reveal a system of colonisation which is in accord with archaic custom, and that their peculiar origin from animal or vegetable has alone to do with their totem significance. Thus, the absence of an extensive totem-named list of places does not, as some would think, invalidate the argument with respect to the few that are forthcoming, and we may well go forward and inquire whether the complement to these few totem-names revealed by the names of the early settlements are not to be found in the Anglo-Saxon personal name-system. Unfortunately, there is not much evidence for this branch of inquiry, but the little there is tends towards the same results.

Already we have noted the personal names connected with wolf, such as as Beowulf, Ethelwulf, etc. Mr. Kemble, in his paper on "Anglo-Saxon Nicknames" in the Winchester volume of the Archæological Institute (1845), mentions such cases as "Enede, or the duck",[2] "Crâwe, the crow",[3] and Buca, an earl,[4] "who probably owed his name to some fancied resemblance, personal or moral, to the animal whose name he bears." In the Anglo-Saxon *Chronicle* we find the names Westerfalcon, Seafowl. Arthgal was "the first Earl of Warwick and knight of the round table", and Arth or Narth signifies a bear.[5]

Placed as these are alongside of the earliest leaders or kings, Hengist and Horsa, we have it before us that the Anglo-Saxons had totem-named stocks. Here, however, our evidence ceases. There

[1] *English Village Community*, 362.
[2] *Flor. Wig. a.*, 96
[3] *Cod. Dip.*, No. 685.
[4] *Ibid.*, No. 75.
[5] Ellis's *Antiquities of Heraldry*, 113.

is no evidence of totem-beliefs, so far as we can actually identify the early beliefs of the Teutonic race; and it would seem as if the tribes had passed beyond the totem stage of social development, retaining just the old system of naming from animal and plant names, and leaving all else of totemism as one of the things of their past.

The tabulation of the totems in this section shows that the following are again introduced:

(2) Wolf.
(3) Fowl.
(4) Cat.
(15) Dog.
(17) Horse.
(20) Trees.
(22) Cow.
(23) Raven.
(27) Otter.
(28) Crow.
(34) Deer.

and introduces the following new totems:

(35) Bear. (36) Griffins. (37) Adder.

(*j*) *Assumption of the Totem-mark.*

We now pass on to our final subject of inquiry, namely, whether in village customs there is anything equivalent to totem-clan customs.

This may be best accomplished by first examining the organisation of a totem-formed settlement. "In the large villages in which the red man dwelt in olden times, those who bore the same totem had their distinct quarter, and set up their device on one of the posts of their gates. Those who bore the same totem are, or at all events are supposed to be, blood relations. On this ground they are forbidden to intermarry. If a stranger presents himself at a distant lodge, his bearing the same totem as its occupier entitles him to a hearty welcome. If a man is killed, everyone who bears his totem is bound to avenge his death. Sometimes the totem carries with it hereditary privileges, such as that of furnishing the tribe with its chief, or that of performing certain religious ceremonies or magic rites. The totem serves for a surname."[1]

The special feature which I am anxious to emphasise in this example of a totem village is that "those who bore the same totem had their distinct quarters in the village, *and set up their device on one of the posts of their gates.*" In the *Academy* of 27th September 1884, some details of this practice are given as follows:—"At

[1] Abrahall's *Western Woods and Waters*, pp. 311-312.

the principal entrance into this enclosure there was the figure of an animal, or some other sign, set up on the top of one of the posts. By means of this sign everybody might know to what particular family the inhabitants of that quarter claimed to belong. For instance, those whose *ododam* was the bear would set up the figure of that animal at their principal gate. Some of the families were called after their *ododam*. For example, those who had the gull for their *ododam* were called the Gull family, or simply the Gulls; they would, of course, put up the figure of the bird at their gate. Others did not adopt this custom; for instance, the family who set up the bear were called the Big Feet. Many of the village gates must have been adorned with very curious carvings, in consequence of parts only of different animals being frequently joined together to make up the ensigns armorial of a family; for instance, the *ododam* of one particular section consisted of the wing of a small hawk and the fins of a sturgeon."

The examination of the land-customs of Britain has revealed the existence of one very prevalent system, namely, the periodical allotment to a body of customary tenants of holdings in a common field. At the time of the allotment each tenant used a particular mark, usually cut into a twig, apple, or other similar object; and the lands which fell to his share were stamped with his mark. The late survival of the common-field system has preserved these marks from destruction, and an examination of them leads us, by clearly marked stages, to the far-off period when they represented the signs of original clan-households, and those signs have every resemblance to totems.

On the sculptured stones of Scotland are figured numerous emblematical marks, which can only be explained by their identification with the tribe-marks of those who erected the stones, whether for definitions of boundaries or for memorials of the dead. The most remarkable of the emblems are the double disc, double disc and sceptre, crescent, crescent and sceptre, altar, altar and sceptre, and hawk, serpent, serpent and sceptre, elephant, horse, bull, boar, bird of prey, human figure with dog's head, fish, dog's head, horseshoe, arch, mirror, mirror-case, comb, comb-case, hippocampus, centaur, capricornus, undefined monsters, human figures, the tree, the camel.[1] It is recorded in the Scottish chronicles that King Reatha, who is supposed to have lived 200 B.C., "commandit als monie hie stanis to be set about the sepulture of

[1] Forbes Leslie's *Early Races of Scotland*, ii, 359, 365, 377.

everie nobillman as was slane be him of Britonis; on their sepulturis was ingravin imageris of dragonis, wolfes, and other bestis for no invention of letteris was in thay days to put their deides of nobilmen in memore."[1]

That the land-marks of the modern English villagers may be identified with the ancient homestead or clan-marks receives illustration from the strongly surviving Scandinavian custom. Mr. Du Chaillu, in his *Land of the Midnight Sun*, says: "Each farmer seemed to have a mark of his own; the agricultural implements and other articles being stamped differently. This old custom is called Bo-märken, and each family has inherited its distinguishing mark from its ancestors. Each parish has its own Bo-märke."[2]

Everyone has his own mark branded on the ears of all his reindeer, and no other person has a right to have the same, as this is lawful proof of ownership. According to custom, no one can make a new mark, but must buy that of an extinct herd; if these are scarce, the price paid to the families that own them is often high; the name of the purchaser and each mark have to be recorded in court like those of any other owner and property.[3]

This system of house-marks prevails in North Germany, and Professor Michelsen, in his treatise *Die Hausemarke*, traces them to a prehistoric period. Mr. Williams thus summarises the evidence in a valuable paper in *Archæologia*.[4] In Southern Ditmarsh a stone slab of the sepulchral chamber in one of the hunengrābe or gigantic tumuli of the stone period has been found, rudely engraved with a mark of a type which is still popular. Weapons of stone and metal are also thus found marked. Marks have been found on Urgräber in the south of Sweden and the north of Europe. They were in common use in Norway, Sweden, Iceland, and Denmark in the 12th and 13th centuries, and the Icelandic Gragas in particular contain numerous minute regulations as to the adoption and the use of marks for sheep, house-cattle, eider-ducks, harpoons, etc. They are also mentioned in the Old Norse and Swedish Rights. In Iceland marks were not to be taken arbitrarily, but the owner's intention was to be announced before five neighbours, and also at the spring *Thing*. In Ditmarsh and Denmark the owner's mark was cut in stone over the principal door of the house; it designated not only his land and cattle, but his stall in the church, and his grave when he was no more. In Holstein

[1] [*Chronicles of Scotland*, 2nd Buke, cap. x.]
[2] *See* vol. i, p. 314.
[3] *See* vol. ii, p. 168.
[4] Vol. xxvii, 383, 384.

the beams of the cottages of the bondservants were incised with the marks of their masters. A pastor writing from Angeln says: "The hides had their marks, which served instead of the names of their owners." In the island of Föhr, the mark cut on a wooden ticket is always sold with the house, and it is cut in stone over the door; and the same custom is still in use in Schleswig and Holstein.

From these important facts it may be concluded that the ancient house-mark included the land-mark, cattle-mark, implement-mark, and grave-mark appertaining to each house, and that house, land, cattle, and grave, thus linked together under a common mark, were the descendants of the once undivided possessions of the clan.

The points in the history of house-marks which have been noted are but the initial features of an extensive and very interesting inquiry which penetrates into studies which have a whole literature devoted to them. Thus, Michelsen considers armorial bearings to have been originally little more than decorated marks, and he asserts that the arms, for instance, of Pope Hadrian VI, a Netherlander, were formed from house-marks; and some knightly families in Schleswig still retain their house-marks as coats of arms. It should also be remembered, says Mr. Williams,[1] that there was often a supposed connection between the figurative name of a house and its owner's mark, which was a representation of the object more or less exact. Michelsen considers that the names and signs of inns are but remnants of the once universal and necessary custom of giving figurative names to houses. Tradesmen's signs are thus but a pictorial substitute for the house-mark, and Pauli considers that the names of citizens, *if names of animals*, originated in the names of their houses.[2]

This extremely suggestive remark, made, be it observed, quite unconscious of its bearing upon researches into totemism, is confirmed quite unexpectedly by a writer upon Scottish surnames. In the Scottish burghs, it is said, "men distinguish themselves and their dwellings by signs or cognizances. It is not only inns and shops, or booths, that exhibit these emblems; burghers and gentry of all classes do the same . . . . and probably it is to this custom that we owe a large class of names that are not otherwise to be accounted for—the family names derived from names of animals. Even if we suppose that some accidental relation to the animals suggested the names of Hare and Dog, Brock, our Scottish name

[1] *Archæologia*, xxxvii, 385. [2] *Ibid.*, 386.

of badger, and the well-known names of Swan, Eagle, Heron, Peacock, and Crow, we cannot adopt such an origin for the surname of Oliphant (the Scotch shape of elephant), or of Lion, the name of the noble family of Strathmore, whose family tradition does not point to any foreign source, but who can hardly allege an encounter with the royal beast in the forest of Angus. They bore for their coat-armour the Lion of Scotland, and may perhaps have exhibited a lion over their gate, as we know they constructed in the shape of a lion that curious silver cup still preserved at Glammis, and which is the prototype of the 'blessed bear of Bradwardine'."[1]

In England the custom of redistributing the lands of a village by lot has preserved to us the actual figures used in these rustic ceremonies. I have collected and compared those in use at Aston in Oxfordshire, Southease in Sussex, Congresbury in Somersetshire, and Marden in Herefordshire, and the likeness that obtains among the marks used by these widely distant villagers seem to point to an ancient origin, while their names include the following animal names: the crane, the hare, the duck, the ox, the mare, the horn. This subject is, however, very obscure, because of the impossibility of comparing actual savage totem-marks. Mr. Lang points out that "totems are, as a rule, objects which may be easily drawn or tattooed, and still more easily indicated in gesture language." Thus, "the Crow tribe is indicated in sign-language by the hands held out on each side, striking the air in the manner of flying. . . . In mentioning the Snakes, the hand imitates the crawling motion of the serpent, and the fingers pointed behind the ear denote the Wolves."[2] Mr. Lang obtains his evidence from some remarkable papers on "Sign-language among North American Indians", published in the first volume of the *Bureau of Ethnology of the Smithsonian Institute.* In this volume only one pictograph is given of the signs used for animals. Thus, bear, being the animal that scratches with long claws, is designated by a figure very roughly representing the open hand. Now, if the connection between this pictograph and its original meaning of bear had been lost, as it would have been if the totem-system had died out before the sign had been recorded, there is absolutely nothing to enable us to identify its earliest meaning as a totem-sign.

That the English village-marks are not the mere invention of

[1] *Concerning some Scotch Surnames*, Edin., 1860, pp. 31-33.
[2] *Custom and Myth*, p. 262.

the unlearned peasantry is, I think, shown by the characteristics common to all of the sets. That they are very ancient may be shown by comparing them with the Runic signs found on the early stone monuments.[1] That they are represented in well-known heraldic signs may be shown by comparing them with some of the early devices pictured by Mr. Ellis in his book on the *Antiquities of Heraldry*, wherein he produces overwhelming evidence to prove that heraldic devices of modern Europe are derived from the tribal marks of prehistoric times.

Of course, if the tribal totem-marks were represented on the houses and on the cattle of the tribesmen as we have shown above, they would be assumed by the chiefs and members of the tribe.[2] When Colonel Campbell was among the wild Khonds of India, he found out that the chieftains lay claim to a fabulous descent, in support of which they pointed "to their coat of arms, as indicating the animal or object from which their ancestor sprung. The Rajah of Goomsur, for example, had a peacock, another prince a snake, and a third a bamboo-tree; and these cognizances are no small sources of pride".[3] It does not seem to me that this recorded belief of the wild and savage Khonds differs from some of the recorded beliefs of British heraldry. Thus, a tradition among the O'Kellys of Hy-many states that they have borne as their crest an enfield since the times of Tadhg Mor:

> ["In the battle of Brian, Tadhg fell
> As a wolf-dog fighting the Danes"]—

from a belief that this fabulous animal issued from the sea at the battle of Clontarf (A.D. 1014) to protect the body of the O'Kelly from the Danes, till rescued by his followers.[4] The tribe of the Ui Duinn, of which St. Brigit was a kinswoman, wore for their crest the figure of a lizard, which appeared at the foot of the oak-tree

[1] Dr. Hanus communicated to Mr. Williams his opinion that "the connection of our marks with Runes is unquestionable."—*Archæologia*, xxxvii, p. 388. Some curious rock inscriptions in Brazil are figured in *Journ. Anthrop. Inst.*, iii, 114; and General Pitt-Rivers considers them to be drawings of men and *animals*, the arms and legs of which were shown by straight lines. Similar marks are to be met with on the south of Spain, and they are also to be found on stones in the British Isles. I will merely observe here that they are not unlike some of the village-marks to which I have drawn attention.

[2] Sullivan, in his *Introd. to O'Curry's Lectures*, i, p. cccclxx, states that "the shields of the ancient Irish seem to have been ornamented with devices which seem to have been peculiar, if not to each Tuath, at least to each chief."

[3] Campbell's *Wild Tribes of Khondistan*, 26.

[4] *Tribes and Customs of the Hy-Many* (Irish Arch. Soc.), p. 99.

above her shrine.[1] The family of the Corvini are said to have hereditarily borne a raven as their crest, in consequence of an early ancestor of that race having been assisted in combat by a bird of this species,[2] and the raven as an old Anglo-Saxon emblem is well known.[3] The founder of the ancient Lincolnshire family of the Tyrwhitts having fallen wounded during a skirmish, would have perished but for the cries of the lapwing, which brought his followers to the spot, and in memory of the deliverance he assumed three pee-wits as his device.[4] The Cresacre family have for their crest "the wild cat", and an old legend connects the founder of their family with the death of a cat at the church door,[5] typical, it may be suggested, of the success of the Church over the older totem-faith. To these examples we may perhaps add the custom of the Highland clans who wore a badge on the side of the bonnet, which ascertained the tribe of the individual. The Grants have the fir or pine, the Macleods, the juniper, the Frazers, the yew, the Macintoshes the box, the Mackenzies the holly, the Macdonalds the heath.[6]

In this section we find repeated the following totem names:

(2) Wolf.
(5) Hare.
(15) Dog.
(17) Horse.
(18) Swine.
(19) Fish.
(20) Trees.
(22) Cow.
(23) Raven.
(26) Dragon.
(28) Crow.
(29) Peacock.

(h) Local Cults connected with the Worship of Totems.

It remains for us to show how totemism was affected by the introduction of a higher order of religion, namely Christianity, in the cases we have had before us. Of course the lower cult would have to give way to the higher. Mr. Lang has given us an example of this from the worship of Apollo in Greece. He notes from Suidas that the Telmissians in Lycia claimed descent from

[1] *Revue Celtique*, iv, 193; Elton, *Origins of English History*, 298.

[2] Lower's *Curiosities of Heraldry*, 13.

[3] Cf. the capture of the magic raven banner by the West Saxons, *Anglo-Saxon Chronicle*, 878, and Asser's *Life of Alfred.*

[4] Swainson's *Folk-lore of Birds*, 186. This is identical with the totem-legend of the islands Leti, Moa, and Lakor, the inhabitants of which reverence a shark, and refuse to eat its flesh because a shark once helped one of their ancestors at sea. Frazer, *lib. cit.*, 7.

[5] Gomme's *Gent. Mag. Lib., Traditions*, 116.

[6] Grant's *Superstitions of the Highlanders*, ii, 207.

Telmissus, who was the child of an amour in which Apollo assumed the form of a dog. "Probably", says Mr. Lang, "the Lycians of Telmissus originally derived their pedigree from a dog, and later made out that the dog was Apollo metamorphosed".[1] But Mr. Lang's "probably", as applicable to the Greek example, becomes almost a certainty when we turn to the parallel state of things to be found in India. Mr. Risly, in describing the totem organisation of some of the aboriginal tribes, says of the Khattya Kumhárs that "they appear to be conscious that the names of their sections are open to misconception, and explain that they are really the names of certain saints, who, being present at Daksha's horse sacrifice, transformed themselves into animals to escape the wrath of Siva, whom Daksha had neglected to invite".[2]

The parallel to this state of things in English folk-lore is fully represented in the legendary accounts of our early saints, by which they are so intimately connected with animals. If we analyse these legends, we find they fall into three groups, each group being most significantly parallel to phases of animal-belief which are represented in folk-tales. Thus we have as group (1) the legends where animals assist the saints in times of emergency; (2) the legends where the saints are recorded to have turned into animals; (3) the legends where the saints are worshipped in the form of animals. I need not give specimens of each of these groups of saint-legends, because they are fairly well known, and because the elaboration of them would require a considerable amount of space. But of the third group very little note has been taken, mainly because the facts belonging to it are not to be found in the ordinary sources of saintly biography, but are still scattered among the traditional beliefs of the people.

Now, we have already noted the remarkable evidence of the Chaddagh fishermen, whose attitude towards the fox as a totem seems so unmistakable. But there is no idea of their worshipping the fox until we come to enquire into the biography of their local saint named MacDara. This saint is the patron saint of the fishermen, who, when passing MacDara's island, always dip their sails thrice, to avoid being shipwrecked. But then, in the folk-belief, we have this remarkable fact, that MacDara's real name was Sinach, a fox[3]—an instance, it would seem, of a totem-cult being transferred to a Christian saint. Another example is even more remarkable. Near the church of Kirk-

[1] *Myth, Ritual, and Religion*, ii, 205. [2] *Asiatic Quarterly Review*, ii, 80.
[3] *Folk-lore Journal*, ii, 259.

michael, in Banffshire, there is a fountain, once highly celebrated, and dedicated to Saint Michael. But the real guardian of the well assumed the semblance of a fly, who was always present, and whose every movement was regarded by the votaries at the shrine with silent awe, and, as he appeared cheerful or dejected, the anxious votaries drew their presages. This guardian fly of the well of St. Michael was believed to be exempt from the laws of mortality. To the eye of ignorance, says the local account, he might sometimes appear dead, but it was only a transmigration into a similar form, which made little alteration to the real identity.[1] It seems impossible to mistake this example as evidence of a local cult where the fly was worshipped; besides which, we have a repetition of the distinct totem-belief, where totemism has grown into a religious cult, that no change takes place in the totem-object—a belief already recorded of the "holy fish" of Kilmore, and found to be extant in India. Other beliefs connected with early saints are not so clear as this. Mystical doves appear frequently in the biography of the Christian saints, but in such a way as to suggest the older cult of the bird having been superseded by the new religion. A snow-white dove with a golden bill was wont to sit on the head of St. Kentigern while occupied in sacred rites among the Picts of Galloway; and it is related that a certain damsel, severely distempered, having been carried to the shrine of St. Ebba at Coldingham, recovered after beholding a white dove on the altar in a vision.[2]

At the well of St. Thecla, at Llandegla in Denbighshire, people afflicted with epilepsy walked three times round the well, after sunset, and if a male, offered a cock, and if a female, a hen. This fowl was carried in a basket, first round the well, and then into the churchyard, where the ceremony was repeated. The patient then went into the church and rested there till daybreak, and then, leaving the fowl in the church, he departed. If the fowl died, the disorder was supposed to be transferred to it and the cure to be effected.[3] The sacred bird, the cock, is here very significant, and at Rhystud the festival day of St. Cynddilig is kept from mid-day to midnight, on the first of November, and during this period the offering of a cock is permitted, as a cure for whooping-cough.[4]

[1] Sinclair's *Statistical Account of Scotland*, xii, 465. On flies as totem-gods among the Greeks, consult Lang's *Myth, Ritual, and Religion*, ii, 201.

[2] Dalyell's *Darker Superstitions*, 418, quoting the *Lives of the Saints;* cf. Baring Gould.

[3] Roberts' *Cambrian Antiquities*, 243.

[4] *Ibid.*, 244.

Important archæological testimony aids the testimony of folk-lore in this section of the subject. In 1877, the skeletons of three horses' heads were discovered in the belfry of Elsdon Church, Northumberland. In the spire immediately over the bell was found a small chamber without any opening, and in it, nearly filling the cavity, were three horses' heads, or rather skulls, piled one against the other in a triangular form, the jaws being uppermost. The chamber was evidently formed to receive them, and the spot chosen for the fixing was the highest part of the church.[1] If we compare this with the well-known passage of Tacitus, describing the sacred groves of the Germans, and stating that the heads of animals hung on the boughs of trees, or, as it is noted in another passage, "immolati diis equi abscissum caput", it seems to me that we cannot resist the self-evident conclusion that the Christian church of Elsdon adopted the custom of the pagan grove in Germany.[2]

Davies, in his wanderings into the history of Druidism, has succeeded in establishing one or two points of importance, one of which is that the sanctuary of one of the great druidic Gods was presided over by the deity in the shape of a bull, the officiating priests being known by the name of the deity[3]; of another, that it was presided over by a sow, the devotees of which bore the title of little pig, the congregation, that of swine, the chief priest, boar[4]; and it is at all events a suggestive parallel that many of the Irish local saints are believed to guard the lives of certain animals; thus, Mr. Elton notes from Giraldus that St. Colman's teal could neither be killed nor injured; St. Brendan provided an asylum for stags, wild boars, and hares; and St. Beanus protected the cranes and hazel hens, which built their nests upon the Ulster mountains.[5] It is also curious that in connection with well-worship, which has been connected with totem-cults by various parallels, the votaries in Ireland crawled around them several times on their hands and knees,[6] the symbolism, at all events, of animal life, and parallel to what it is conceivable to have been the practice among the Druidic priests, who identified themselves with the names and cults of the bull and the boar.

[1] *Berwickshire Naturalists' Club*, ix, 510.

[2] The hanging of animals' skulls—the bear—upon trees outside the houses is a custom of the Ainos, *Journ. Anthrop. Inst.*, iii, 239, and the bear was a totem-god among these people, *ibid.*, 124, and *Folk-lore Journal*, vi, 11.

[3] Davies's *Mythology of the Druids*, 136, 138.

[4] *Ibid.*, 414.

[5] Elton's *Origins of English History*, 298.

[6] Roberts' *Cambrian Popular Antiquities*, 236, 238

The succession from totem-worship to saint-worship, which in the above cases seems marked very strongly, is also reflected by less well-marked instances. Remembering the close relationships between the totem and the individual totemist, remembering the assistance which totems are called upon to give to the tribe when engaged in hostilities against other tribes, it seems that we may connect with this stage of totem-belief the following Welsh custom. When any person supposes himself highly injured, it is not uncommon for him to repair to some church dedicated to a celebrated saint, as Llan Flian in Anglesea, and Clynog in Carnarvonshire, and there, as it is termed, offer his enemy. He kneels down on his bare knees in the church, and, offering a piece of money to the saint, utters the most virulent imprecations, calling down curses and misfortunes upon the offender and his family for generations to come.[1] A still more significant variant of this singular practice is recorded as appertaining to the well of St. Ælian, not far from Bettws Abergeley in Denbighshire. Near the well resided a woman who officiated as priestess. To her the person who wished to inflict a curse upon an enemy resorted, and for a trifling sum she registered in a book kept for the purpose the name of the person on whom it was wished it should fall. A pin was then dropped into the well in the name of the victim, and the curse was complete.[2] The whole of this ceremony is both anti-Christian and totemistic. In the first place, the symbolism of the name of the victim doing duty for the victim himself is an echo of a far-reaching savage idea.[3] Saints are not specially friendly to one family, totems are; saints do not help their worshippers in vengeance, totems do; saints do not carry on the blood-feud to future generations of one family, totems do; and above all, totemism favours the notion of women being priests, and not men.[4]

The tabulation of totem-names appearing in the survival of totem-practices under other cults repeat the following totems:

(2) Wolf.	(16) Fox.
(3) Fowl.	(17) Horse.
(4) Hare.	(18) Swine.

[1] Hampson's *Medii Ævi Kal.*, i, 170; Forbes Leslie, *Early Races of Scotland*, i, 95.

[2] Roberts' *Cambrian Popular Antiquities*, 246.

[3] Cf. Mr. Clodd's admirable article on this subject in *Folk-lore Journal*, vii, 135-161.

[4] On the house father as priest among the Aryans, see Hearn's *Aryan Household*, 85; on the oldest woman as priestess at rites strongly indicative of totem-origin among the Karens, see *Journ. As. Soc. Bengal*, xxxiv (2), 206.

(32) Dove,

and I think we may include the Banffshire well-fly[1] under the same category as

(7) Butterfly.

One very important matter remains to be considered in connection with this subject, namely, which among the races of Britain must be credited with the introduction of totemism. Clearly it must have been a race who not only were totemistic, but who had not advanced far towards a higher civilisation. Now the totemism of the Teutonic invaders, if it be taken as proved, does not penetrate much beyond their name-system, and was abandoned very soon—that is, within two hundred years—for a social system which was then well on its way to the threshold of civilisation, and it does not seem to me to be reasonable to attribute the survivals of totemism in folk-lore to the Teutons. Of the Celts we know much less, and of the ethnological condition of Britain during the so-called Celtic period we know next to nothing. But the Celtic period insensibly shades off into the period of the dolmen builders, the stone-circle builders, the hut-dwellers and the hill-men. Nowhere can we draw the line of demarcation, and in the meantime modern research is gradually showing us that such a line is needed in order to account for the phenomena it is called upon to deal with. Thus, almost within the domain of the present subject, we find that Professor Rhys draws a line of distinction between the greater divinities of the Celtic pantheon, who lent themselves to the localisation, and the crowd of minor divinities, who were never anything else but *genii locorum.* Among the latter he includes "the spirits of particular forests, mountain tops, rocks, lakes, rivers, river-sources, and all springs of water which have in later times been treated as holy-wells."[2] He then goes on to say that "it has been supposed, and not without reason, that these landscape divinities re-acted powerfully on the popular imagination, in which they had their existence, by imparting to the physical surroundings of the Celt the charm of a weird and unformulated poetry. But what race was it that gave the Celtic landscape of antiquity its population of spirits? The Celtic invaders of Aryan stock brought their gods with them to the lands they conquered; but as to the innumerable divinities attached, so to say, to the soil, the great majority of them were very possibly the creations of the peoples here before the Celts."[3]

[1] Another insect-tribe, the ants, existed in the north of Cashmere. McLennan, *Fortnightly Review*, xii, 419.

[2] *Celtic Heathendom*, 105. [3] *Ibid.*

In pursuing the investigation of this possibility the student at once sees cleared away from his path a difficulty which has been recognised, but not adequately met. "If the remains of fetichism", says Mr. Keary, "could be so vital, fetichism itself must have had a lengthened sway; but the people could never have become the Aryan *nation* had their notions of unity been confined to the local fetich and the village commune."[1] Let us once clearly understand that the local fetichism to be found in Aryan countries simply represents the undying faiths of the older race which the Aryans incorporated into their own high beliefs, and the difficulties lying in the way of accounting for Aryan progress seem to vanish.[2] What we have to note, therefore, is that the requirements of Aryan history need the identification of the local fetich-creeds as non-Aryan in origin; and that the requirements of a scientific examination of any branch of these creeds need the explanation of the means by which they have survived—first as a local cult, finally as the superstitions included within the domain of folk-lore.

Now it is significant, in view of these researches into the survivals of totemism, that when we come to consider the way in which the Aryan may be shown to have assimilated the non-Aryan beliefs with which he came into contact, the best illustration is obtained from one of the most prevalent phases of witchcraft, namely, that in which the witch is supposed to have the power of transforming herself into animals. In India, one of the totem-tribes of the aborigines is that of the Moondahs. The Aryan tribes settled in Chota Nagpore and Singbhoom firmly believe that these Moondahs have powers as wizards and witches, and can transform themselves into tigers and other beasts of prey, with the view of devouring their enemies, and that they can witch away the lives of man and beast.[3] A very slight acquaintance with the painful records of witchcraft in this country reveals these selfsame beliefs, prevalent among the Aryans of India towards their non-Aryan neighbours, as entertained by the peasantry of this country towards witches.[4] Can we not interpret them, there-

[1] *Outlines of Primitive Belief*, 110.

[2] Mr. Lang notes the difficulty in his researches into Greek myth, and confesses that "it almost escapes our inquiry". If consideration be given to the survival of savage beliefs among the aboriginal population of Greece, does not this answer the questions Mr. Lang puts about Artemis and the bear-cult? Cf. *Myth, Ritual, and Religion*, ii, 215.

[3] Dalton, *Kols of Chota Nagpore* in *Journ. Asiatic Soc. Bengal*, 1886, part ii, p. 158.

[4] *E.g.*, Dalyell's *Darker Superstitions*, 560.

fore, as the survival of an old antagonism between Aryan and non-Aryans, and particularly with reference to totem-beliefs? These Moondahs, who could turn themselves into tigers and other beasts of prey, actually called themselves tigers and other beasts of prey, worshipped them, believed they were descended from them, according to all the doctrines of totem-beliefs. The attitude of their neighbours towards them may well be explained, therefore, as a result of contact with totem-tribes. But then the selfsame attitude of the mediæval English or Scottish peasant may logically, taking into consideration all the evidence for the survival of totemism, be interpreted in the same manner. Witches are supposed to have been able to turn themselves into hares, foxes, and cats, and we must remember these are the last remnants of the wild animals of Britain, and therefore take the place of the whole tribe of the animal world who were formerly called upon to do duty in the totem-system of belief, a substitution which is proved by one example at all events, namely, the legend recorded by Giraldus, wherein witches turned themselves into wolves. The origin and history of witchcraft in Europe has yet to be written, but when it is undertaken, the phenomenon which the study of totem-survivals presents must be carefully considered. In the meantime, it appears to me that a clue to the earliest record of the subject may be found in the well-known description of the Druid priestesses on the island of Sena by Pomponius Mela.[1] These were capable of performing almost all the powers which in later years belonged to witches, including the raising of storms by incantation, and of transforming themselves into whatever animals they pleased. Remembering that on the great authority of Professor Rhys we may classify Druidic rites as belonging to the non-Aryan races of Britain,[2] there seems convincing proof that, as in India, the Aryan invaders were made gradually to believe that the people whom they conquered and enslaved could turn themselves into the animals whose names they bore.

We have now examined a not inconsiderable section of folk-belief, and, grouping the items according to the formula supplied from savage practices, we have seen that they assume the position of relics of a long-lost system of social organisation. Like all attempts to reset the survivals of prehistoric life within their own

[1] Lib. iii, cap. 6. This island is not to be identified by its name, but it is at least curious to note that the north suburb of Douglas, in the Isle of Man, was formerly called Sena.—Harrison's *Records of the Tynwald*, 14.

[2] Cf. Fergusson, *Tree and Serpent Worship*, 29.

framework, we have not succeeded in producing an exact picture—it is but a mosaic. Still I venture to think that the conclusion is irresistible, that folk-lore has preserved, by means of its traditional sanction, unquestioned evidence of totemism in British custom. Setting aside any one or more items which may be due to the accidents of folk-lore; allowing that the original totem-objects may not now be represented by some of the objects with which folk-lore endows totem-beliefs; admitting that the negative evidence of folk-belief is not complete, and probably may never now be made complete; we have remaining to us a proposition of remarkable clearness and precision, founded upon the evidence of folk-lore, supplemented here and there by the evidence of archæology and language. This evidence includes three very significant type-forms of totem survival in folk-lore, namely, the Clan Coneely, the Ossory Wolf, and the Chaddagh fishermen, and a large group of folk-belief, which is at present best explained if we consider its items in the light of fragmentary relics of once complete forms of totemism. That this large group of folk-belief which we have dealt with needs explanation at the hands of the student of history to account for its existence alongside all the facts of civilisation, seems to me to be one of the elementary features of the science of folk-lore. It cannot be suggested that every item of it is due to the existence of superstitious tendencies, uninfluenced by traditional adherence to old forms of superstition; for, granting that the mere existence of superstition is no proof of archaic origin, it must be admitted at the same time that those who have handed down for the observation of folk-lorists the various items of superstitions which I have now examined, are the peasant class of the outlying parts of our land, who would either base their modern superstition upon traditional lines, or colour it with traditional fancies, but who would even more likely carry on from generation to generation the old forms of superstition sanctified by the belief and practice of their forefathers.[1] And when we come to classify and compare these traditional superstitions, we find that they readily, without any forcing or straining of the forms in which they are now represented, fit in with the classification which belongs to savage totemism. No doubt

[1] Thus Mr. Roberts notices an answer to a query as to the origin of well-superstitions, "that their ancestors always did it", *Cambrian Popular Antiquities*, 238; and Spenser, in recording his curious notes of Irish customs, takes care to preface them by the observation that "it is the maner of many nations to be very superstitious and diligent observers of old customes and antiquities, which they receive by continuous tradition from their parents," *View of the State of Ireland*, 100.

they have during the centuries of their existence as folk-lore undergone some process of change; it is certain that there are animal and plant superstitions which cannot readily be fitted into a totemistic framework; but the changes which folk-lore undergoes will account for some of the superstitions which we have not been able to take count of, and it has not been my object, on the present occasion, to bring forward any evidence but that which seemed to belong to totemism in the form in which each superstition or custom now exists. Further research will doubtless consider all these points, and will settle the relationship of the animal and plant superstitions which have not yet found a place in the totem-system to those which have found such a place. This relationship will, I am persuaded, be shown to be one of change from older types. Transitional forms in folk-lore, like all evidence which belongs to the study of survivals, assume shapes which it is sometimes hard to trace to an original. In the meantime it appears to me that, both by the methods adopted and by the results arrived at, it may be put forward as a sound working hypothesis that in the survivals of folk-lore lay hid the evidence of a once-existing system of totemism in Britain—an hypothesis which at all events will serve the purpose of directing future research, just as Mr. McLennan twenty years ago, in putting forward his hypothesis on totemism among the ancient nations, stated his well-founded belief that the only way to deal with the ancient mythologies "is to make them the subject of an hypothesis".[1]

[1] *Fortnightly Review*, xii, 408.

G. L. GOMME.

THE ETRUSCAN NUMERALS.

I.

IN offering the following remarks on the Etruscan Numerals, and therefore on that most obscure of linguistic problems—the Etruscan language, I have no intention of giving any lengthy historical account of the melancholy career, not progress, of Etruscology during the last 150 years. The votaries of the problem have compared Etruscan with Ethiopic, Egyptian, Coptic, Arabic, Hebrew, Chinese, Basque, Sanskrit, Greek, Latin, Keltic, Teutonic, Rhaetian, etc.; but without any real success. Each theory has convinced scarcely anyone except its inventor, and the riddle has remained unsolved. In the abstract, it seemed probable that Etruscan was an uncouth and outlying member of the Indo-European Family. Hence the prolonged efforts of Lanzi and the Italian school, which culminated in the thirty years' research and huge failure of Corssen.[1] These efforts, although now on the decline, are still being continued by several savants, foremost amongst whom stands Dr. Deecke, who, to the surprise of Etruscologists, "suddenly turned round upon his own demolition of Corssen's doctrine, and avowed himself a convert to the belief that Etruscan was, after all, an Indo-European language."[2] Deecke's labours in the field of Etruscology have been so great, and are, notwithstanding his present opinions, so valuable, that his name will ever be entitled to the deepest respect of the workers in this difficult investigation. Another notable Aryanist is Prof. Bugge of Christiania, who, in his pamphlet *Der Ursprung der Etrusker durch zwei lemnische Inschriften erläutert*, 1886, has given a remarkable rendering, on Aryanistic principles, of the recently-discovered Etruscan Inscriptions of Lemnos; although the Professor, as Dr. Carl Pauli convincingly shows, has adopted a wrong order of the words, yet, nevertheless, he appears to find no difficulty in translating the Inscriptions, a circumstance which speaks for itself.[3] A third is Prof. Moratti,[4] of whose efforts a critic remarks: "Part of

[1] *Die Sprache der Etrusker*, 1874.
[2] Prof. Sayce, in *The Academy*, Jan. 9, 1886.
[3] *Vide* Sayce, "The Etruscans in Lemnos", in *The Academy*, July 24, 1886.
[4] *Studii sulla antiche Lingue italiche*, 1887.

the work consists of translations (?) of the Etruscan . . . inscriptions, in which almost every word is interpreted without even the addition of a note of interrogation. Our confidence in these translations is shaken, however, by finding equally fluent renderings of Mordtmann's copies of the Phrygian execratory formula, which Prof. Ramsay has shown to be a mass of blunders. In fact, we may say that if Prof. Moratti has succeeded in proving anything, it is that Etruscan has nothing to do either with Armenian or with any other European language."[1]

Not more successful is Deecke's attempted translation of the Magliano Inscription,[2] and the question is very neatly summed up by Prof. Sayce, who observes that the fact that men of such acuteness and scholarship as Deecke and Bugge "should have spent so much time and labour over the Etruscan problem without producing results which other scholars can accept, is of itself a sufficient condemnation of their theories and method."[3] The labours of former workers in the field, such as the earlier Italian students, Sir Wm. Betham, Donaldson, the Earl of Crawford, Stickel—who regarded Etruscan as a Semitic dialect—and others, have now only an interest in a historico-literary point of view. The late Rev. Robert Ellis, whose last and posthumous work, *Sources of the Etruscan and Basque Languages*, appeared in 1886, regarded the Etruscans as being "a mixed race of Iberians and Africans", but his opinions do not require any detailed reference. The Rev. John Campbell of Montreal, in his *Etruria Capta*, 1886, announces that he has solved "the Etruscan problem". His method is to read the Etruscan letters syllabically, and he gives translations of various Inscriptions, including that of Magliano. As there is no reason to read the Etruscan letters syllabically, but quite the contrary, it is needless to notice Mr. Campbell's theory in detail; but it is to be remarked that he connects Etruscan with Basque, and somewhat boldly observes, "It is now generally agreed that the Etruscans were a Turanian people."[4] Two other Etruscologists remain to be noticed. Dr. Carl Pauli of Leipzic is the chief of those who study the Inscriptions *in* the Inscriptions, and his works are storehouses of patient comparison and acute sugges-

[1] *The Academy*, Dec. 3, 1887.

[2] *Rheinisches Museum für Philologie* (Neununddreissigsten Bandes, erstes Heft), 1884, p. 141 *et seq.* Of this translation M. Bréal remarks:—"Il y a quelque chose de plus extraordinaire encore que cette traduction: c'est la manière dont elle est justifiée" (*Revue Critique*, 1884, p. 122).

[3] "Etruscan Researches", in *The Academy*, Jan. 9, 1886.

[4] *Etruria Capta*, 2.

tion. He regards the language as Non-Aryan, and as originally connected with Non-Aryan peoples in Southern Asia Minor. He is at his best when refuting the later Aryanistic heresies of his former collaborateur, Dr. Deecke. Amongst his works are *Die etruskischen Zahlwörter*, 1882; numerous important articles in his periodical, *Altitalische Studien*, 1883-7; *Eine Vorgriechische Inschrift von Lemnos*, 1886; and *Die Inschriften nordetruskischen Alphabets*, 1885. In 1874 Canon Isaac Taylor produced his *Etruscan Researches*, which was followed by a pamphlet *On the Etruscan Language*, 1876. His theory is that the Etruscans were a Ugric people, this term denoting "the Turanian tribes of the great Asiatic tableland", and comprising "the Finnic, Samojedic, Turkic (or Tataric), Mongolic, and Tungusic peoples".[1] This view I believe to be the correct one. It is a line of research even now but very slightly worked, whereas the Aryan and Semitic theories of Etruscan have been proved by actual exploration to be valueless. Amongst other works in connection with Etruria and Etruscology may be mentioned Dempster, *De Etruria Regali;* Caylus, *Recueil d'Antiquités Etrusques;* K. O. Müller, *Die Etrusker*, 1877, edit. by Deecke; Dennis (the Pausanias of Etruria), *The Cities and Cemeteries of Etruria*, edit. 1878; Gerhard, *Etruskische Spiegel;* and the all-important work of Fabretti, the *Corpus Inscriptionum Italicarum*, 1867, with the three *Supplements*, and the *Appendice* by Gamurrini.[2]

We observe resemblances by means of comparison, and comparison, to be of any real value, must be scientifically conducted, have constant reference to linguistic laws and the principles of letter-change, and take into account all the available evidence, both internal and external. Forms closely resembling each other are frequently wholly unconnected, whilst forms very dissimilar are often nearly related. The historical sequence of forms is most important, and should always be ascertained if possible; and again, numerous variants alone will enable us to follow a form through its successive avatars, perhaps each more abraded than the last. For, as the breath of heaven wears the hill-tops, so the breath of man, acting on the lines of the Law of Least Effort, wears away the words of human speech. Thus the Akkadian word *timmena*,

[1] *Etruscan Researches*, 26.

[2] *Vide* also R. B. Jr., "Ugro-Altaic Numerals: One-Five", in the *Proceedings* of the Society of Biblical Archæology, Feb. 1888; "The Etruscan Inscriptions of Lemnos", in the same *Proceedings*, April-May, 1888; and "Etruscan Letters", in *The Academy*, Nov. 27, 1886; May 21, Aug. 20, and Nov. 12, 1887; Jan. 14, March 10, and Dec. 1, 1888; and Feb. 9 and May 4, 1889.

'foundation-stone', dwindles through the forms *timmen-timme-timtem-te*, as the English *eal-swa* peaks through *also-alse-als-as.*

It has long been recognised that scarcely any branch of language is of more importance and significance than the numerals. In examining these we find ourselves introduced to most interesting phases of archaic psychology, many of which can be studied in the experience of to-day. Thus Mr. A. H. Keane, in his review of Mr. E. M. Curr's *Australian Race*,[1] observes: "The fact is here clearly established that the bulk of the Australian languages have radicals only for the numerals *one* and *two*. Many get as far as *three*, but Mr. Curr is probably right in rejecting the *four*, which some of his correspondents have furnished, but which either simply means 'plenty', or is due to a misconception on their part." Thus in the Puri dialect of Brazil *three* = *prica*, 'many'. The human frame, with its face, eyes, hands, feet, fingers, and toes, has supplied the requisite abacus for notation. The hand may represent '1' or '5', the hands '2'; '15' may = 2 hands + a foot, and thus on. The linguistic student of numbers will of course consult the works of Pott and Tylor, and, in the present connexion, the important monograph of Schott, *Das Zahlwort in der tschudischen sprachenclasse, wie auch im türkischen, tungusischen und mongolischen.* We have also carefully to consider what are the usual and unusual ways of regarding the same thing. It was always looked at in what was really to the thinker the easiest point of view, whether this may seem so now to us or not. Thus, '3' may be thought of as 2 + 1, 1 + 2, 'many', "that which is beyond" (2), or, again, as 'foot', *i.e.*, (hand + hand) + foot = 3, and so on. So, (hand + hand + eye) + eye may = '4', in which case the '4'-word will be an 'eye'-word, and the other three objects which, in the original idea, make up the number, will be understood; or, again, '4' may be regarded as 2 + 2. '6' will be either 1 + 5 or 5 + 1; in the latter case '7' will be 5 + 2, and '8' will generally be 5 + 3. But 8 and 9 are also often formed by subtraction, being respectively regarded as 10 − 2 and 10 − 1. Nor is this by any means unnatural, for in gesture-language it would be easier to hold up the 10 fingers and then 1 or 2 with some movement denoting subtraction, than to hold up 8 or 9 fingers. In Ostiak '18' = 20 − 2; in Basque, which is very peculiar, '30' = 20 + 10, '40' = 2 × 20, '50' = (2 × 20) + 10, '60' = 3 × 20, '70' = 60 + 10, '80' = 4 × 20, and '90' = 80 + 10. In one African dialect given by Pott, '16' = 20 − 4 With these preliminary considerations we may pass to particulars.

[1] *The Academy*, Nov. 17, 1888, p. 317.

II.

The following Etruscan words are admittedly numerals. Great difference of opinion has prevailed respecting their interpretation; and this is inevitable when the basis of conjecture is either false analogy, or a balancing of more or less faint probabilities:

Cealχls	*Eslz*	*Maχs*
Cezpa	*Zaθrmisc*	*Mealχlsc*[1]
Cezpalχ	*Zaθrums*	*Muvalχls*
Cezpalχals	*Zal*	*Muvalχl*
Cezpz	*Zl*	*Nurθzi*
Celχls	*Huθ*	*Sa*
Ci	*Huθs*	*Sas*
Ciemzaθrms	*Hut*	*Semφalχls*
Cizi	*Θu*	*Semφs*
Cis	*Θunesi*	
Esal	*Θunz*	
Esals	*Maχ*	
Eslem[*z*]*aθrumis*		

Each of the above 34 somewhat curious forms is fully considered and explained in the present Paper. The forms immediately connected with each other are:

Ci *Cis* *Cizi* *Cie*[mzaθrms] *Ce*[alχls] *Ce*[lχls]	*Zl* *Zal* *Esal* *Esals* *Eslz* *Esl*[emzaθrumis]	*Θu* *Θunz* *Θunesi*	*Mealχlsc* *Muvalχls* *Muvalχl*
Cezpa *Cezpz* *Cezpa*[lχ] *Cezpa*[lχals]	*Zaθrmisc* *Zaθrums* *Zaθrms*	*Θrmisc* *Θrumis* *Θrums* *Θrms*	*Sa* *Sas* *Za*[θrmisc] *Za*[θrums] *Za*[θrms]
	Huθ *Hut* *Huθs*	*Lχ* *Lχl* *Lχals*	*Semφs* *Semφalχls*
		Maχ *Maχs*	

[1] "Lord Crauford translates *avils machs mealchlsc*, 'aged 18—a leper'. The decade *mealchl* is, he thinks, related to the Latin *macula*, 'a spot'. What diseases are denoted by such words as *muvalchls*, *cealchls*, and *semphalchls*, he does not inform us. Corssen is quite unable to explain these words as Italic decades. In heroic despair he has broached the astounding theory that they are the names of peculiarly carved coffin ornaments whose particular nature he cannot explain." (Taylor, *On the Etruscan Language*, 17.)

III.

Ere proceeding to a tentative reconstruction of the Etruscan numerals from 1 to 100, it will be desirable to notice, by way of illustration and with some slight particularity, various Akkadian, Kamacintzi, Arintzi, and Kottic numerals. Beginning with the Akkadian (under which I include the Sumerian) as the most ancient known member of the Turanian group, I am, through the kindness of Prof. Sayce and Mr. T. G. Pinches, enabled to give the latest readings of the numerals 1-10, which are as follows :—

1. *Guis, gis, dis, das, gi, ge, as, us, a.* = 'mouth', 'face', *i.e.*, one (man).
2. *Kas, gas.* = the hands. Cf. Ak. *kat*, 'hand', etc.
   Bi. = dem. pron. 'This' (other), *i.e.*, another, a second.
   Mimma, minna, mina, min, minnabi. = "like (the same, ditto, repetition)."
3. *Unus, uvus, vis, bis, is.* = plurality. Cf. Ak. *mes, mis*, 'many', sign of plural.
   Esse = foot.
4. *Saba, sav, sana, san, za (tsa).* } = 'eye'. Cf. Ak. *si*, Zyrianian *si-n*, Samoied *sai*, Ostiak *sê-m*, etc., 'eye'.
   Simu, siv. }
   Nin, ninga. = 'foot'. Cf. Ak. *ne-r, ni-r*, 'foot'.[1]
   Limmu. = 'eye' (*vide sup.*). Cf. Ak. *lim*, 'eye'.
5. *Var, bar, para.* } = the five-fingered hand.[2] A variant of '2'.
   Vas, ia, a. Sa. }
6. *Âs, assa.* *Âs* = *a* + *as*, = 5 + 1 (Sayce).
7. *Sisinna, iminna, imina.* = *ia* + *minna*, = 5 + 2.
8. *Ussa.* = *ia* + *esse*, = 5 + 3.
9. *Isimmu, ilimmu.* = *ia* + *limmu*, = 5 + 4.
10. *Uvun, ugun, gu, u, ga, a.*
    Pur, bur. Cf. Ak. *bur*, 'heap'.

The archaic '1'-word, the oldest known form of which is *guis*, is very closely connected with a number of 'mouth'-words, *e.g.*, Akkadian *gu, zu*, Finnic *suu*, Esthonian and Tcheremiss *su*, Lapponic *čo-d* ('throat'), Vogul *tu-s*, Ostiak *tu-t*, Magyar *szaj*, Yenissei-Ostiak *xu, xu'o, ku*, Arintzi *kho-n*, etc.

It will be observed that the '10'-word *pur* = 'heap', and that the

[1] *Vide* R. B. Jr., *Ugro-Altaic Numerals.* Comparative List of '4'-words and 'foot'-words.

[2] *Vide* ibid. Comparative List of '5'-words and 'hand'-words.

meaning of the '10'-word *ugun* was similar, is evident from the Turkic *yighyn*, 'heap'. As to the connexion between Akkadian and Sumerian and the Turanian or Altaic languages, Prof. Sayce observes, "No unprejudiced student of linguistic science can resist the conviction that Dr. Hommel's comparison of the Sumerian grammar and vocabulary with the grammar and vocabulary of the Turko-Tatar languages is founded on a solid basis of fact."[1] With *ugun*, cf. the Akkadian *umuna*, '1000', *i.e.*, a great heap. In Akkadian *m* and *v* or *w* are equivalents, and *v* is here interchanged with *g*, *uvun-ugun*.

The Akkadian for '20' is *nis*, which may be formed from *nit-a*, 'man', as *kas*, '2', from *kat*, and on the following line of thought: "Among many and distant tribes, men wanting to express 5 in words called it simply by their name for the *hand*, which they held up to denote it. In like manner they said *two hands* or *half a man* to denote 10; the word *foot* carried on the reckoning up to 15, and to 20, which they described in words as in gesture by the *hands and feet* together, or as *one man*."[2]

The Akkadian for '100', *me*, *eme*, means primarily 'voice', 'to call', the cuneiform ideograph being originally the drawing of a tongue, so that '100' is a number of people assembled together.

As conjectural forms Mr. Pinches gives *asgu* (=1+10=11), *mingu* (12), *esgu* (13), *limgu* (14), and so on.

I will next take two ancient sets of North Asian numerals, preserved by the learned and exact traveller Strahlenberg,[3] namely those of the "Kamacintzi, who live on the River Mana, in Siberia", and those of the "Arintzi, who call themselves *Ara*, or *Arr* [cf. the Akkadian *eri*, 'man', Tatar *are*, etc.], and live on the River Jenesei." These two small and ancient tribes are, I believe, long since extinct; and this circumstance illustrates the chief difficulty in dealing with a monumentally-preserved language like Etruscan. Most of the directly illustrative forms have perished in the course of time. These two sets of numerals are very closely connected with each other, but also display some remarkable differences, and some highly instructive instances of what I may call 'abradation'.

Kamacintzi	Arintzi
1. *Chu-odschae.*	*Ku-isa.*

Here we have the Ak. *guis;* cf. the Turkic *aghyz*, 'mouth',

[1] *Religion of the Ancient Babylonians*, 429.
[2] Tylor, *Primitive Culture*, i, 224.
[3] *History of Siberia*, Eng. edit., 1738.

ïuz, 'face'. Other Altaic '1'-forms are the Yenissei-Ostiak *kusa-m*, *χuse-m*, *xusa*, *xus*, and the Kottic *huca*.

2. *Y-nae.* *K-i-nae.*

The Ak. *m-ina*, *k* or *g* at times = *m* or *v*,[1] as above in the Ak. *uvun*, *ugun*; Kottic *ina*,[2] Etruscan CI, *cine*.

3. *Ton-g-a.* *Thun-g-a.*

A novel formation, evidently connected with the Arintzi *Thien-g*, 'eye', one of the few words of the language preserved by Strahlenberg. Cf. the Turkic *'aïn*, 'eye', probably abraded from an earlier (*th*)*aïn*(*g*), and the Chinese *yen*. As noticed, in Akkadian 'eye' is used as a '4'-word.

4. *Scha-gae.* *Sche-ya.*

The Ak. *sa-ba*, *za* (*tsa*),[3] Kottic *se-ga*, Etruscan SA.

5. *Hka-gae.* *Chal-a.*

Here the Kam. *hka* = the Ar. *hka-l*, and the Turko-Tataric word *kar*, *kol*, 'arm', 'hand', supplies the basis of the concept. Cf. the Tchagatai *kol*, 'hand', the Tshuwash *kul*, 'arm', the Osmanli *kol*, 'arm', the abraded Turkish *el*, 'hand', and *el-li* (= *al-lig*, Etruscan L*χ*, *leχa*, *i.e.*, 5 × 10), '50'. The mode of formation is the same as that of the Ak. '5', but another 'hand'-word is employed. The Kottic 5-form is *xe-ga*, which represents a prior *xel-ga*.

6. *Hkel-usa* (5 + 1). *Y-ga* (5 + 1).

In the Kam. *hkel-usa* the *l* has been preserved, as in the Ar. *chal-a*. *Usa* = the Ar. *isa* in *kuisa*, '1', the Kam. *odschae*, the Ak. *us*, *as*.

The Ar. '6'-form *y-ga* deserves careful attention. It will be observed that in Ak. *a* is equally an abraded '1'-form and an abraded '5'-form, whilst *as* is an abraded '1'-form and the '6'-form; and that *as*, the '6'-form, contains *a*, the '5'-form, without showing it. So, here, *y-ga* = the *i-sa* in *kuisa*, '1', and the *chal*, '5', Kam. *hkel*, has fallen away and is understood, so that *y-ga* literally = (5) + 1. There are many examples in numerals of a portion of the number being thus unexpressed. The Ar. *y-ga*, therefore, = the Ak. *a-ssa*, = (5) + 1 = 6, the Kam. *u-sa*, only that in Kam. the '5' (*hkel*) is expressed. Such a result which, I think, is

[1] *Vide* Schott, *Über das Altaï'sche oder Finnisch-Tatarische Sprachengeschlecht*, 61.

[2] *Vide* Castrén, *Versuch- einer Jenissei- Ostjakischen und Kottischen Sprachlehre*, 1858.

[3] Sayce, *Assyrian Grammar*, Syllabary, No. 441.

beyond reasonable doubt, can only be arrived at by the most careful comparison of variant forms, and I shall have occasion to again refer to the principle. The Kottic '6' is *xeluca.*

7. *Hkel-ina* (5 + 2). *U-na* (5 + 2).

Ina = the Kam. *ynae*, '2', and *una*, standing for *chal-una* = the Ar. *(k)inae*, '2'. Kottic *xelina.*

8. *Chel-tonga* (5 + 3). *Kina-minschau* (10 − 2).

The form *chel* closely approaches the Ar. *chal* in *chala*, '5'; the Kottic form is *xaltonga.* But at this number a remarkable difference appears between the Kam. and Ar. systems. *Minschau*, '10', is a word to which I have to refer when speaking of the Ar. numeral for '80', and so merely observe in passing that here we meet with the principle of subtraction in numeral-formation, *kina-minschau* meaning "2 from 10". The circumstance affords also an excellent illustration of the remarkable differences in user which are frequently presented by adjoining and mainly very similar dialects.

9. *Hwelina* (5 + 4). *Kuisa-minschau* (10 − 1).

The Kam. *hwe-lina* = the Ak. *ia-limmu*, '9'. There does not appear to be a variant form in Ak. for the aspirate; thus the same form = *a*, *'a*, and *ha.* *M* and *n* are at times interchangeable, as in the Ak. *mimma*, *minna*, '2'.

10. *Haga.* *Hioga.*

The Ak. *ugun* (*hugun*) and Kottic *haga.* *Hioga* is thus a second distinct '10'-form employed by the Arintzi, *minschau* being the first.

11. *Haga-chuodschae* (10 + 1). *Hkog-kuisa* (10 + 1).

The Kottic *hagal-huca.* If we may argue by analogy I should conjecture that the original and unabraded Akkadian for '11' was *ugun-guis* (10 + 1), rather than *guis-ugun* (1 + 10) = *asgu.*

12. *Haga-inae* (10 + 2). *Hkog-ina* (10 + 2).

Hkog is, of course, an abbreviation of *hioga.*

20. *Yn-tung* (2 × 10). *Kin-tung* (2 × 10).

Here we meet with a third '10'-form *tung*, the Ostiak *jong*, *jang*, *jeung*, Yakute *djean*, *uon*, Turkic, Koibal, and Karagass *on*, Tunguse *zan*, Mantchu *dchouan*, Yenissei *θjun*, and Etruscan θRUM, perhaps originally all merely variants of the Ak. u-*gun.* In the Magliano Inscription we thrice meet with the Et. word χIMθM, which Deecke, on Aryanistic principles, renders *centum*, but in which we may, I think, see χIMθRUM = the Ar. *kin-tung*; and

this χIMθM must surely be the χIMθ of the famous and untranslated Cippus Perusinus, longest of Etruscan Inscriptions. The Kottic form *intukng* is curious, the *k* appearing in an unexpected place.

30. *Tonga-tu* (3 × 10). *Tong-tung* (3 × 10).

In *tonga-tu* the '10'-form *tung* is abraded, and an exact parallel occurs in Jurak-Samoied, where the '10'-form which in Ostiak appears as *jong*, is found as *ju*. The Kottic '30'-form *intukngu*ca, which must mean "20 + 1 (ten)", *huca* being, as noticed, the Kottic '1', is very singular, and is exactly paralleled by the Kam. '40'. The Basque '30', *hogei-eta-hamar* or *oguei-t-amar*, = 20 + 10.

40. *Tonga-tu-chuodschae* (3 × 10 + 1 ten). *Scheig-tung* (4 × 10).

This remarkable Kam. decade-formation is unique in the list, all the other decades being formed regularly and in the usual way; and, similarly, the Kottic '30'-form stands alone and as a special formation in that language. The Ar. *scheig-tung* is the Kottic *seg-tukng*, the Etruscan ZA-θRUM, and Yenissei *sai-θjun*.

50. *Hkog-tugu* (5 × 10). *Kuwull* (10 × 5).

Hko-g = the '5'-form *hka-g-ae*, and *tugu* is a variant of *tung*. In the Ar. *ku-wull* we find the '10'-form *ku*, Ak. *gu*, placed first, whilst *wull* = *chal-a*, '5'.

60. *Hkelusa-tu* (6 × 10). *Ui-tung* (6 × 10).

Kottic *xelus-tukng*. *Ui* = *Y*(*-ga*), '6'.

70. *Hkelina-tu* (7 × 10). *Un-tung* (7 × 10).

80. *Cheltong-tu* (8 × 10). *Kina-minschau-tung* (2 from 10 × 10).

Cheltong-tu is the Kottic *xalton-tukng*, but the Ar. forms for '80' and '90' are wholly different and based on the Ar. '8' and '9' forms. The ancient word *minschau* means '10', but is, in origin, a compound of two words, each of which meant '10', namely, (1) *min*, which is identical with the Samoied *mûn*, *mûne*, *munö*, 'finger', and (2) *schau*, which = "die Zehn repräsentirendes Suff. *-scha*",[1] which appears in Mantchu as *schy*, the Chinese *shĭh*, '10'. Thus *minschau* = (originally) "the-fingers-ten"; but the word *min* subsequently obtains the secondary meaning '10', as *e.g.*, in the Zyrianian *nelja-myn*, '40', *i.e.*, 4 × 10. It is further to be observed that the '10'-form *min*, *myn*, appears in the variants *mis*, *mys*, *mes*[2]; and as each part of the word *minschau* thus means '10', the syllables could be transposed and yet the sense retained, just as it would be immaterial whether we said "fingers ten" or "ten fingers". This is

[1] Pott, *Zählmethode*, 51.

[2] *Vide* Schott, *Das Zahlwort*, 20.

actually what has occurred, *e.g.*, in Zyrianian. Here '8' is *kök-jamys, i.e.*, '2' (*kyk*) from '10'; *ja-mys* = *schau min*, or *mis.* I am particular in calling attention to this remarkable word for '80' because it constitutes a most convincing link between the Arintzi and Etruscan languages. One great difficulty in dealing with Etruscan arises from abbreviations, which, naturally enough, are constantly found in sepulchral and other inscriptions. The word *kina-minschau-tung* appears in Etruscan as CIEMZAθRM, the abbreviated form of an original CI*n*E-M*ez*ZA-θR*u*M, which we are thus enabled by comparison to restore. *Mez-za* = the Zyrianian *ja-mys*, and the reading is suggested by the well-known partiality of Etruscan for a *z*-sound. The chances against the above parallel being accidental must be *x* to 1.[1]

90. *Hwelin-tugu* (9 × 10). *Kuisa-minschau-tung* (1 from 10 × 10).

100. *Duss* (10 × 10). *Yuzz* (10 × 10).

This form appears in the Turkic *yüz* (variants of which in different dialects are *jo-f, ju-f, gu-f, sus, su-r*), *ïuz*, the Yakute *suss, sys*, the Kottic *ujax*, the Koibal *djus*, the Karagass *tjus*, the Yenissei-Ostiak *kies*, the Kamassin *tjus*, the Yenissei-Samoied *ju*, the Jurak-Samoied *ju-r*, the Tawgy-Samoied *ji-r*, the Zyrianian *sjo, so*, the Votiak *su*, the Permian *das-das* (10 × 10) the Magyar *szaz*, etc. The ordinary way of regarding 100 is 10 × 10, and Strahlenberg gives the Tangubti '100' word as *dsgu-dsgu.* This at once suggests 10 × 10, and when we examine the form *dis-gu*, we find that in most remarkable parallel with *minschau*, each syllable in it at one time meant '10', and afterwards the combination came to bear that meaning. Thus *ds, dis*, is a familiar Turanian '10'-form. "Die erste zehnwurzel sei *t-s, d-s*", observes Schott,[2] *e.g.*, the Zyrianian *das*, the Magyar *tiz*, etc. *Gu* we have already met with as a '10'-word, the Ak. *gu*, Kam. *haga* (= Ak. *ugun*), etc.

1000. *Hag-duss* (10 × 100). *Kog-yuzz* (10 × 100).

Hag = Kam. *haga*, '10'; *kog* = the Ar. *hioga*, '10', which appears in '11' as *hkog.* The Kottic form is *hax-ujax.* This word will complete the notice of these numerals, which may serve as a useful preliminary to the consideration of the Etruscan forms, known and probable, regarding the general question both from the psychological and linguistic standpoints.

[1] *Vide inf.*, p. 398. [2] *Das Zahlwort*, 12.

IV.

The following tentative and undogmatic list of Etruscan numerals is based alike upon such internal evidence as I have been able to obtain from the monuments, and upon external comparison on the lines already indicated, and in the direction first suggested by Canon Isaac Taylor. In the list admitted numerals are written in Roman capitals, Etruscan words not certainly numerals in italics, forms not actually known but suggested by a strict analogy and highly probable, in italics preceded by an asterisk, and forms not actually known and more doubtful, in italics preceded by an asterisk and enclosed in square brackets. I think it best to give the forms by themselves, in the first instance, that they may be studied together as a whole, and add some observations on them in the following sections.

Proposed Restoration of the Etruscan Cardinal Numbers from 'One' to a 'Hundred'.

1. MAχ (*vide* 41, 71, 91).
2. CI, **cine*. Cf. Fabretti, No. 2339: *cizi*, 'twice'.
3. ZAL, ZL, ESAL. Cf. Fabretti, No. 2057: *eslz*, 'thrice'.
4. SA. Cf. Fabretti, No. 2104: *sas*, '4th'.
5. θU, **θun*. Cf. Fabretti, *Sup.*, i, No. 387: *θunz* (otherwise *θunesi*; *vide* 35), "5 times".
6. HUθ, HUT. = 5 + 1. Cf. Fabretti, *Sup.*, ii, No. 116: *huθs*, '6th'.
7. CEZ, CEZ-PA. = 5 + 2. Cf. Fabretti, *Sup.*, i, No. 387: *cezpz*, "7 times".
8. CIEM, *cim*, *χiem*, *χim*, *χm*. = 2 from 10 (*vide* 80).
9. SEM, SEM-ϕA. = 1 from 10. Cf. Fabretti, No. 2033 *bis* Dc: *semϕs*, '9th'.
10. NURθ, *tesan*. Cf. Fabretti, No. 2339: *nurθzi*, "10 times".

Other occurring '10'-forms are Lχ (*leχa*, *liχa*), θRUM, and *mezza*

11. [**tesmaχ*]. = 10 + 1.
12. [**teci*]. = *tesci*, = 10 + 2.
13. [**tezal*]. = 10 + 3. Cf. Et. *tuzl*.
14. [**tesa*]. = 10 + 4. Cf. Et. *testsa*.
15. *teθu*. = *tesθu*, = 10 + 5.
16. [**tesuθ*]. = *teshuθ*, = 10 + 6.
17. [**tece*]. = *tescez*, = 10 + 7. Cf. Et. *tece*.
18. [**tecim*]. = *tesciem*, = 10 + 8.
19. *tesamsa*. = *te* (san)-*sam*(ez)*za*, = 10 + 9.

20. *χimθm, χimθ, *χimθrum.* = CI*n*-θRUM, = 2 × 10.

CEALχ, CELχ. = CI + Lχ, = 2 × 10. Unabbreviated form—*cealeχa.*

21. **maχ-cealeχa.* = 1 + 20. Cf. Fabretti, *Sup.*, ii, No. 112: *cealχls*, '20th'.

22. **ci-cealeχa.* = 2 + 20. Cf. Fabretti, No. 2108: *cis cealχls*, '22nd', = "2nd + 20th".

23. **esal-cealeχa.* = 3 + 20.

24. **sa-cealeχa.* = 4 + 20.

25. **θun-cealeχa.* = 5 + 20.

26. **huθ-cealeχa.* = 6 + 20. Cf. Fabretti, *Sup.*, i, No. 437: *huθs celχls*, '26th'.

27. **cez-cealeχa.* = 7 + 20.

28. **cim-cealeχa.* = 8 + 20.

29. **sem-cealeχa.* = 9 + 20.

30. MUVALχ, MEALχ. = 3 × 10. Variants, both used. Unabbreviated forms—*muvaleχa, mealeχa.*

31. **maχ* { *-muvaleχa* / *-mealeχa* } = 1 + 30. Cf. Fabretti, No. 2340: [*m*]*aχs mealχlsc*, '31st'.

32. **ci-muvaleχa.* = 2 + 30. Cf. Fabretti, No. 2335*d*: *cis muvalχl* . . ., '32nd'.

33. **esal-muvaleχa* = 3 + 30.

34. **sa-muvaleχa.* = 4 + 30.

35. **θun-muvaleχa.* = 5 + 30. Cf. Fabretti, No. 2335*a*: *θunesi muvalχls*, '35th'.

36. **huθ-muvaleχa.* = 6 + 30. Cf. Fabretti, *Sup.*, ii, No. 115: *huθs muvalχls*, '36th'.

37. **cez-muvaleχa.* = 7 + 30.

38. **cim-muvaleχa.* = 8 + 30.

39. **sem-muvaleχa.* = 9 + 30.

40. ZAθRUM. = 4 × 10.

41. **maχ-zaθrum.* = 1 + 40. Cf. Fabretti, *Sup.*, i, No. 388: *maχs zaθrums*, '41st'.

42. **ci-zaθrum.* = 2 + 40. Cf. Deecke, *Bezz.*, i, 260, No. 14: *cis zaθrmisc*, '42nd'.

43. **esal-zaθrum.* = 3 + 40.

44. **sa-zaθrum.* = 4 + 40.

45. **θun-zaθrum.* = 5 + 40.

46. **huθ-zaθrum.* = 6 + 40.

47. **cez-zaθrum.* = 7 + 40.

48. **cim-zaθrum.* = 8 + 40.

49. **sem-zaθrum.* = 9 + 40.

50. **θunχulθ.* = 5 × 10. Unabbreviated forms — *θunχuleθe, θunχuleθa, θunχuleχa.* Cf. Et. *θunχulθl.*

51. **maχ-θunχuleχa.* = 1 + 50.

52. **ci-θunχuleχa* = 2 + 50.

53. **esal-θunχuleχa.* = 3 + 50.

54. **sa-θunχuleχa.* = 4 + 50.

55. **θu-θunχuleχa.* = 5 + 50.

56. **huθ-θunχuleχa.* = 6 + 50.

57. **cez-θunχuleχa.* = 7 + 50.

58. **cim-θunχuleχa.* = 8 + 50.

59. **sem-θunχuleχa.* = 9 + 50.

60. **huθrum.* = 6 × 10.

61. **maχ-huθrum.* = 1 + 60.

62. **ci-huθrum.* = 2 + 60.

63. **esal-huθrum.* = 3 + 60.

64. **sa-huθrum.* = 4 + 60.

65. **θun huθrum.* = 5 + 60.

66. **huta-huθrum.* = 6 + 60.

67. **cez-huθrum.* = 7 + 60.

68. **cim-huθrum.* = 8 + 60.

69. **sem-huθrum.* = 9 + 60.

70. ESLEM[Z]AθRUM. = (3 from 10) × 10. Unabbreviated form *—esale-mezza-θrum.* Cf. Gamurrini, No. 658: *eslem[z]aθrumis.* CEZPALχ. = 7 × 10. Unabbreviated form—*cezpaleχa.*

71. **maχ-cezpaleχa.* = 1 + 70. Cf. *Mon. ined.*, viii, Tab. XXXVI, ap. Pauli, *Die et. Zahlwörter*, 8: *maχ cezpalχ*, '71'.

72. **ci-cezpaleχa.* = 2 + 70.

73. **esal-cezpaleχa.* = 3 + 70. Cf., Fabretti, *Sup.*, i, No. 387: *esals cezpalχals*, '73rd'.

74. **sa-cezpaleχa.* = 4 + 70.

75. **θun-cezpaleχa.* = 5 + 70.

76. **huθ-cezpaleχa.* = 6 + 70.

77. **cez-cezpaleχa.* = 7 + 70.

78. **cim-cezpaleχa.* = 8 + 70.

79. **sem-cezpaleχa.* = 9 + 70.

80. *CIEMZAθRM. = (2 from 10) × 10. Unabbreviated form—*cine-mezza-θrum.* Cf. Fabretti, No. 2071: *ciemzaθrms*, '80th'.

81. **maχ-cinemezzaθrum.* = 1 + 80.

82. **ci-cinemezzaθrum.* = 2 + 80.

83. **esal-cinemezzaθrum.* = 3 + 80.

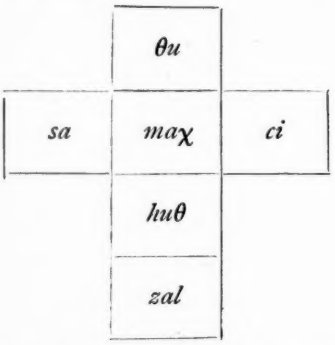
84. **sa-cinemezzaθrum.* = 4 + 80.

85. **θu-cinemezzaθrum.* = 5 + 80.

86. **huθ-cinemezzaθrum.* = 6 + 80.
87. **cez-cinemezzaθrum.* = 7 + 80.
88. **cim-cinemezzaθrum.* = 8 + 80.
89. **sem-cinemezzaθrum.* = 9 + 80.
90. SEMΦALχ. = 9 × 10. Unabbreviated form—*semφaleχa.*
91. **maχ-semφaleχa.* = 1 + 90. Cf. Fabretti, No. 2070 : *maχs semφalχls*, '91st'.
92. **ci-semφaleχa.* = 2 + 90.
93. **esal-semφaleχa.* = 3 + 90.
94. **sa-semφaleχa.* = 4 + 90.
95. **θun-semφaleχa.* = 5 + 90.
96. **huθ-semφaleχa.* = 6 + 90.
97. **cez-semφaleχa.* = 7 + 90.
98. **cim-semφaleχa.* = 8 + 90.
99. **sem-semφaleχa.* = 9 + 90.
100. **vurθ.*

V.

The Numerals 1-6.—In 1848 a pair of Etruscan dice were discovered near Toscanella, marked on their six sides, not as usual with pips, but with the six words *maχ-zal, ci-sa, θu-huθ.* It is obvious, and now[1] universally admitted, that these words are the Etruscan names of the numerals 1-6; and the researches of Signor Campanari have shown that Etruscan dice are marked 1-3, 2-4, 5-6. As Canon Taylor has long since convincingly proved, the Inscription Fabretti, No. 2055, shows that *ci* means '2', because it is there applied to a certain number of children, and two names are given and two ages, both in figures.[2] Hence *sa* means '4.' The words on the dice appear as follows :—



[1] Corssen read these words as an Inscription :—*Machthuzal huθ cisa*, which he translated, "Magnus donarium hoc cisorio facit."

[2] Vide *Etruscan Researches*, 191.

As regards *maχ*, there is a remarkable consensus of opinion, based on various reasons. Campanari, Ellis, Deecke (who formerly thought otherwise), and Taylor are clear that it means '1', whilst I understand Pauli's conclusion to be that the chances are 2 out of 3 that it means '1'. This combination of opinion is in itself entitled to very great weight, and my own investigations induce me to agree with it absolutely. But further: we have seen that *ci* means '2'; it occurs twice in the expressions *clenar ci*[1] and *ci clenar*,[2] "two sons" or 'children', *clen-ar* being a plural form; and in another Inscription[3] we meet with the expression *clenar zal*. Now on Etruscan dice 1, 2, 3, and 4 follow each other in order, and *ci* being '2' and *sa* '4', *maχ*, the number between them must be '1', or '3'. But *zal* must be '3', because it is applied to the plural form *clenar*, so that *cle-nar zal* will mean "children 3", and, further, there is no instance in which a plural form is applied to *maχ*. Hence *maχ* = '1'.

As regards *zal*, turning to authority we find that Campanari, Ellis, Deecke, and Taylor consider it to mean '3', which, as above shown, it must mean. Pauli alone considers it to mean '2', a conclusion arrived at independently of any linguistic comparisons, and, also, in my opinion vitiated by a double error, namely, (1) he has not taken into account Campanari's law of the opposite numbers of Etruscan dice. The opposite numbers are 1-3 in pips and *maχ-zal* in words; hence, *maχ* being '1', *zal* cannot be '2'. And (2) he has fallen into a mistake in connection with the numbers mentioned in the Cippus Perusinus. This at present untranslatable Inscription speaks of *naper xii*, "12 grave-niches", and also of *naper zl*, *hut naper*, and *naper ci*. Hence, not perhaps unnaturally, it has often been supposed that the three numerals *zal*, *hut*, and *ci*, must together = 12. Nothing, however, can really be more inconclusive. Arguing on similar lines, I might equally well suppose that the tomb-founder made a grave-niche for himself and 11 others for members of his family, and thus arrive at the meanings for these three numerals which I believe them to have possessed, namely, *zal*, '3', *hut*, '6', and *ci*, '2'. But this would be equally inconclusive, although very possible; whilst the evidence with respect to *ci* shows that Pauli's view is absolutely incorrect. It will, of course, be noticed that the foregoing definite results are arrived at altogether independently of external linguistic evidence, which

[1] Fabretti, No. 2055.
[2] Ibid., No. 2340.
[3] Ibid., No. 2056.
[4] Ibid., No. 1914.

latter confirmatory proof is both abundant in material and conclusive in its character, as will further appear.

The remaining dice-numerals are *θu-huθ*, which must mean 5 — 6 or 6 — 5. Pauli thinks *θu* may be '5' and *huθ* '6', and convincingly refutes the Aryanists who wish to connect *θu* with the Lat. *duo*, and *huθ* with the Aryan *kvet*. We possess the decade-forms of 20, 30, 40, 70, 80, and 90, and hence, again, it is clear that these two words must mean '5' and '6'; but which is which internal evidence does not, I think, absolutely show. Hence we must summon linguistic comparison to our aid, and the result will abundantly justify Canon Taylor's conclusion that *θu* = '5', and *huθ*, '6'.

MA*χ*. 'One'. Basis-concept:—The 'Finger' or 'Hand'. Comparative Table:—

Tungusic.—*o-m-m-u-k-o-n*
u-m-m-u-k-o-n
u-m —*u-k-o-n* Cf. *hunakan* } 'finger'.
o-m —*u-k-o-n* · *unakan* }
a-m —*u-k-o-n*
o-m —*o-k-o-n*
a-m ——*k-a*
u-m ———*u-n* Cf. Ostiak-Samoied *mun, mune,*
u-m ———*o-n* *muno*, 'finger'.
m ——*u-k-o-n*
a-m ——*u*
Mordvin.— *v* ——*ai-k-e*
v ——*ei-k-e*
v ——*e*
Etruscan.— *m* —— *a-χ* Cf. Tatar *bar-maχ*, 'finger',
Mokscha.— *i-fk-a* Turkic *par-maq*.
fk-a
Vogul.— *a-kv-a*
Ostiak-Samoied.— *o-k-e-r*
o-k-u-r
o-kk-a-r
Zyrianian.— *o-t-i-k*
o-t-i
o-t
Permian.— *o-t-y-k*
Votiak.— *o-d-y-g*
o-g

Magyar. —	*e-ck-i* *e-g-y*	} Cf. Mag. *ujj*, 'finger'.
Lapponic. —	*a-kt*	
	a-kt-a	
Finnic. —	*y-ks-i*	
Esthonian. —	*u-ks*	
Tcheremiss. —	*i-k*	
Ostiak. —	*i-t*	
Akkadian. —	*i-kd* *i-d*	} Cf. Ak. *id*, 'hand'.
Assyrian. —	*e-d-u*	} Loan words.
	i-kh-itu	
Hebrew. —	*e-kh-od*	
	a-kh-at	
Kamassin. —	*o-b*	
	o-m	
Jurak-Samoied. —	*o-b*	
	o-p-oi	
Tawgy. —	*o—ai*	
Yenissei. —	*ô* (most abraded form).	
Mantchu. —	*y*(-ga)	
Chinese. —	*yih*	

From the first syllable of the Tatar *bar-maχ*, 'finger', come the Yakute and Turkic *bir*, Koibal *ber*, and Karagass *birà*, 'one'. It is only a thorough tabular comparison which thus enables us to detect the variant and abraded forms.

CI. 'Two'. Basis-concept:—The Two Hands—Repetition.

Akkadian. —	*m-i-n-a*	
Yenissei. —	*k-i-n-a*	
Arintzi. —	*k-i-n-ae*	
Etruscan. —	*c-i-n-e*	
	c-i	Cf. Zyrianian *ki*, 'hand'.
Kamacintzi. —	*y-n-ae*	
Kottic. —	*i-n-a*	
Yenissei-Ostiak. —	*ye-n-a-m*	
	y-n-a-m	
	ye-n-a-ng	

For numerous instances of Turanian '2'-words and 'hand'-words, *vide* Taylor, *Etruscan Researches*, 167 *et seq.*; Lenormant, *Chaldean Magic*, 300-1; R. B. Jr., *Ugro-Altaic Numerals: One-*

Five (in the *Proceedings* of the Society of Biblical Archæology, February 1888).

ZAL. 'Three'. A general Ugro-Altaic concept:— (Hand + hand) + Foot.

Akkadian. —	*e-s-s-e*	Cf. Ak. *essá*, 'foot'.
Etruscan. —	*e—s-a-l*	
	z-a-l	
	z—l	
Yukagir. —	*j-a-l*-on	
Tungusic. —	*g-i-l*-an	
	i-l-an	
	e-l-an	
Finnic. —	*k-o-l*-me	Cf. Buriat *kol*, 'foot'.
Mokscha. —	*k-o-l*-ma	Cf. Mongol *kul*, 'foot'.
Mordvin. —	*k-o-l*-mo	
Esthonian. } — Lapponic. }	*k-o-l*-m	
Nogai Tatar. —	*o-l*	Cf. Tungusic *al*-gan, 'foot'.
Vogul. —	*k-o-r*-om	Cf. Ostiak *kur*, 'foot'.
Magyar. —	*h-a-r*-om	Cf. Tungusic *hal*-gan, 'foot'
Basque. —	*h-i-r*-u	
Zyrianian. —	*k-u-j*-im	
Surgut. —	*k-u-d*-em	
Ostiak. —	*x-u-d*-em	
Tcheremiss. —	*k-u*—m	

L final at times disappears in Akkadian, *e.g.*, *mal-ma*, *pil-pi*, *bil-bi*, etc. Perhaps an original final *l* in *esse-l*, *essa-l*, reappears in the Assyrian '3'-form *sal*-si, *sal*-satu, which may be a loan-word. Mr. Bertin remarks, "This root [*sal-si*] was either chosen for 'three' at a later period, or has undergone such changes that it is difficult to detect in some [Semitic] dialects."[1] I should be more inclined to regard it as borrowed from the Akkadian, just as the Assyrian *estin*, '1', is the Akkadian *as*, '1',+ *ta-a-an*, 'number', *i.e.*, "number 1".

The *l-r* change is familiar, *e.g.*, the Susianian Lagama-*l*—Lagama-*r*; the Mongol *delge-r—derge-l*, etc.

B, *g*, *d*, *j*, *q*, *w*, *x*, and *y* do not occur in Etruscan.

[1] *The Assyrian Numerals* (*Trans.* Soc. Bib. Archæol., vii, 376).

SA. 'Four'. A general Ugro-Altaic concept:— (Hand + hand + eye) + eye.

Akkadian. —	*s-a-b-a*	
	s-a-v	
	s-a-n-a	
	s-a-n	Cf. Ostiak *sem*, 'eye'.
	s-a	Cf. Samoied *sai*, 'eye'.
	z-a	
	s-i-v	Cf. Akkadian *si*, 'eye'.
	s-i-m-u	Cf. Zyrianian *sin*, 'eye', Tcheemiss *sinza*.
Etruscan. —	*s-a*	Cf. Jurak Samoied *saeu*, 'eye'.
Yenissei. —	*s-a* (-gem)	Cf. Lapponic *sa-lbme*, 'eye'.
	s-e (-ga)	
	s-i (-em)	Cf. Finnic *si-l-ma*, 'eye'.
	s-i (-a)	Cf. Kamassin *sima*, 'eye'.
	tsch-a (-ja)	Cf. Ostiak Samoied *saiji*, 'eye'.
Kamacintzi. —	*sch-a* (-gae)	
Arintzi. —	*sch-e* (-ya)	
Mantchu. —	*ss-i* (-ggae)	
Chinese. —	*sz-e*	Cf. Magyar *szem*, 'eye'.
Siamese. —	*s-i*	Cf. Yenissei-Samoied *sei*, 'eye'.

θU. 'Five'. Basis concept:—the Hand, as having five fingers.

As Canon Taylor has pointed out, the following Samoied '6'-forms remarkably illustrate the meaning of the Etruscan *θu* as '5':—

Ostiak Samoied.—	*muk-te-t*	= Etruscan *maχ-θu*, = 1 + 5, = 6.
	muk-te	
	muk-tu-t	
	muk-te-ng	
Tawgy. —	*ma-tu*	
Yenissei. —	*mo-tu*	
Kamassin. —	*muk-tu-d*	
	muk-tu-n	
Jurak. —	*ma-t*	

Another '5'-form is now used in Samoied instead of this earlier *tu*, *tun*. The following are some '5'-words:—

Akkadian. —	*s-a*	Cf. Akkadian *su*, 'hand'.

Yenissei-Ostiak. —	*x-a*	
	x-a (-ja)	Cf. Vogul *tu-la*, 'finger'.
Buriat. —	*t-a* (-ban)	Cf. Kamtchatkan *to-no*, 'hand'.
Tungusic. —	*t-o-n* (-ga)	Cf. Yenissei *ton*, 'hand'.
	t-u-n (-ya)	Cf. Permian *tschun*, 'finger'.
Etruscan. —	*θ-u*	Cf. Lapponic *tju-te*, 'finger'.
	θ-u-n (-z) = "five times".	

Similarly, the Basque *bortz*, '5', = *bihatz*, 'thumb', 'hand'. *S-t* is a not unusual Turanian letter-change, *e.g.*, Finnic *s*-üpi, *s*-eiwäs, Esthonian *t*-up, *t*-eiwas. In Et. *t* often becomes *θ*, which latter again often = the Lat. *s*; *e.g.*, Et. *lar-θ* = Et.-Lat. *lar-s*, Et. *naφo-θ* = Lat. *nepo-s*, etc.[1]

HU*θ*. 'Six'. Regarded as 5 + 1.

Some have supposed that the following '6'-words were formed from a lower number by letter-variation, a supposition which I regard as being in itself exceedingly improbable. The human mind has almost invariably moved on the line of least effort, although some things are easier to one generation and some to another, and hence obscurity often arises. But the natural and easiest way to regard '6' is either as 1 + 5 or 5 + 1. The numerals of various peoples present us with numerous examples of each of these reckonings; and the following '6'-words have at times been regarded as forming 1 + 5. I have carefully considered this view, and am compelled to reject it on its own merits; and do not doubt that the forms represent "5 + 1". I was led, in the first instance, to pay special attention to the point from the circumstance that the '7'-forms clearly represent 5 + 2, and, when such is the case, '6'-forms = 5 + 1. The '6'-forms in question are :—

Akkadian. —	*a-s* *h-a-s*	} = *a* + *as*, = 5 + 1.[2]
	a-s-s-a	
Yenissei-Ostiak. —	*a-s*	
Kamacintzi. — (hkel)	*-u-s—a*[3]	
Kottic. — (xel)	*-u-c—a*	
Arintzi. —	*ẏ-g—a* = (5) + 1.[3]	
Finnic. —	*k-uu-s—i*	

[1] *Vide* R. B. Jr., *The Etruscan Inscriptions of Lemnos*, 323-4.
[2] *Vide sup.*, p. 381. [3] *Vide* remarks, *sup.*, p. 383.

Esthonian. —	*k-uu-s*
Ostiak. —	*k-u-t*
	x-u-t
Tcheremiss. —	*k-u-t*
Lapponic. } —	*k-o-t*
Vogul. }	
Mordvin. —	*k-o-t—o*
Votiak. —	*k-ua-t*
Zyrianian. —	*k-vai-t*
Permian. —	*k-va-t*
Magyar. —	*h-a-t*
Etruscan. —	*h-u-t*
	h-u-θ

The Ak. *as, has,* '6', is thus, as shown, identical with the Ak. *as,* '1', this latter being an abbreviation of an earlier *guis,* Ar. *kuisa,* Kam. *chuodschae ;* and, similarly, the Yenissei-Ostiak *xusä,* '1', reappears in the Yen.-Ost. *as,* '6', and the Kottic *huca,*' 1', in the Kottic (xel)-*uca,* '6'. In the Ar. *y-ga,* the '5'-form has dropped out, just as it is swallowed up in the Ak. form. The Ak. form reappears in the other dialects, preceded by the guttural *k,* which in Mag. changes to *h, e.g.,* Ak. *χana, χa,* 'fish', Finnic *kala,* Lapponic *guollc,* Tcheremiss *kol,* Mordvin *kal,* Vogul *kul,* Mag. *hal.* The *s-t* change, above noticed, also appears. In Akkadian *u* and *v* are often interchangeable[1] (cf. the Vot. *kuat,* Zyr. *kvait*), and the same principle obtains in Etruscan[2]; in the former language *m* = *v,* or *w ;* and in the latter also *m* at times = *v.*[3]

CEZ, CEZ-PA. 'Seven'. Regarded as 5 + 2.

In the following list, the forms, except the Akkadian, are the older forms given by Strahlenberg :—

Akkadian. —	*s-i-s-i-n-n-a* = 5 + 2.
Finnic. —	*z-ei-tz-e-m—e*
Votiak. —	*zs-e-s-e-m*
Zyrianian. } —	*zs-i-s-i-m*
Mordvin. }	
Tcheremiss. —	*z-ie—m—e-tt*
Samoied. —	*s-iu*
	s-ei (-ba)
Mantchu. —	*sz-y* (-gae)

[1] *Vide* Sayce, *Assyrian Grammar,* 46.
[2] *Vide* Müller and Deecke, *Die Etrusker,* ii, 382. [3] *Ibid.,* 436.

Some modern forms :—

Finnic. —	*s-ei-c-e-m-a-n*
Esthonian. —	*s-ei-c-e*
Mordvin. —	*s-i-s-e-m*
Zyrianian. —	*s-i-z-i-m*
Vogul. —	*s-iu*
Samoied. —	*s-eo*
	s-ai (-bua)
Lapponic. —	*ć-e-ć*
	tj-e-tj-e
	kj-e-tj-a
Magyar. —	*h-e-t*
Chinese. —	*tsh-ei-h*
Basque. —	*z-a-z-pi*
Etruscan. —	*c-e-z-pa*
Akkadian. —	*s-i-s-*na (abbreviated form)

The Ak. *sisinna* arises out of *va*-s ('5') + *m-inna* ('2') abbreviated as *ias-inna.* It will be observed that the suffixes in the Samoied *sei-ba,* Mantchu *szy-gae,* Basque *zaz-pi,* and Et. *cez-pa* (cf. Et. *sem-φa,* '9') correspond. The Chinese form is derived from the Mantchu.

CIEM. 'Eight'. Regarded as 10 − 2.

"Unklar ist *χiem*",[1] remarks Deecke, and unclear it must remain to those who would interpret Etruscan on Aryanistic principles; but, as we have already seen,[2] it is the abbreviated form of an original *cine-mezza,* which = the Ar. *kina-minschau.* "The Egyptians", says Mr. Renouf,[3] "as is generally well known, were in the habit of omitting vowels in writing, which were absolutely necessary for the pronunciation of a word and were supplied by the reader's familiarity with the living language"; and the same principle, and not restricted to vowels only, exactly applies to the Etruscan language and inscriptions. From the instance of *sem,* '9', I infer that *cine-mezza* had ceased to be a spoken form for some centuries B.C. The '10'-forms *mez* and *za* I shall refer to in their proper place.[4]

Amongst other instances of the formation of '8' by subtraction we find :—

[1] In Etruscan *c* often = χ, *e.g.*, in the loan-word *-c*, *-χ*, the Lat. *que.*
[2] *Vide sup.*, p. 386.
[3] *Proceedings* Soc. Bib. Archæol., Nov. 1888, p. 8.
[4] *Vide inf.*, p. 403.

Finnic.— *kahdeksan* = *kaksi* ('2') from *ksan* ('10').
Lapponic.— *kaktse* = *kwekte* ('2') — *tse* ('10').
Esthonian { *kahheksa* / *katesa* } = { *kaks* / *kats* } ('2') from { *ksa* / *sa* } ('10').
Mokscha.— *kafksa* = *kafta* ('2') — *ksa* ('10').
Zyrianian.—*kokjamys* = *kyk* ('2') — *ja-mys* ('10').

SEM, SEM-φA. 'Nine'. Regarded as 10—1.

Pauli considers that the Et. for '9' was *semφ*, but the *φa* (cf. *cez-pa*) is only a suffix, an enclitic conjunction, as in *sem-φa-leχ-a*; and this latter being a decade-form and not a dice-form, *sem*, on internal evidence, must be either '7', '8', or '9'. As we have seen, it is not '7' or '8', therefore it must be '9'. But, further: according to linguistic law, as 8 = 10 − 2, 9 must = 10—1; we have therefore to see whether *sem*, in the light of dialect-comparison, fulfils this combination of requirements, *i.e.*, whether it means '9', and '9' formed by subtraction. If it answers this special and peculiar test, we must, I think, needs conclude that the principle of interpretation here advocated is correct.

We have seen[1] that the Et. '8' is a variant of the Arintzi '8'; hence the Et. '9' is probably a variant of the Ar. '9'. This latter form, as noticed, is *kuisa-minschau*, "1 from 10", *ku-isa* being the Ak. *gu-is*, and the '10'-form *min*[2] is at times abraded to a single letter, "*m-n* (*ma*, *mi*, *m*)",[3] as, indeed, it is in *cie-m*. As the Ar. *kin-a*, '2' = the Et. *cin-e*, so the Ar. *is-a* '1', would = an Et. *is-e*. Again, as the Et. form *e-sal*, '3', becomes *zal* and *zl*, so by analogy would the form *i-se* become abraded as *se*, to which adding the *m*, being the most abraded form of the Et. *mez* (= *min*), we have exactly the Et. '9'-form SE-M, = "1 from 10". An Arintzi form, similarly abraded, would have been SA-M, thus:—(*kui-*) SA-M (*in-schau*).[4] Whether this combination of evidence, converging on different lines to a focus, can be accidental, I leave to the judgment of the reader.

VI.

The '10'-forms. NURθ.—For this special '10'-form, which is merely the name of an Etruscan goddess, we are indebted to the acumen of Pauli. Nails, indicating "the ten months of the old

[1] *Sup.*, p. 386. [2] *Vide inf.*, p. 403. [3] Schott, *Das Zahlwort*, 20.
[4] *Vide* R. B. Jr., "The Etruscan Numerals '*Seven*' and '*Nine*'" (in *The Academy*, Aug. 20, 1887).

Etruscan year", were fixed in her temple,[1] and hence she became "the goddess Ten", Lat. Decuma, Decima; just as, conversely, the Euphratean lunar goddess Istar was called "the goddess Fifteen", because specially connected with the fifteenth day of the month.[2] *Nurθ* as a numeral-form occurs at least twice in the Inscriptions; once[3] in the fragmentary form *-rθz, i.e.*, *[nu]rθz* (not *h-uθz*, as Deecke would read), "10 times"; and, again,[4] in the erroneous and almost impossible form *nupφzi*, for which Pauli, no doubt correctly, reads *nurθzi*, "10 times". This is in exact accordance with the peculiar formation in *-z -zi* of Etruscan numeral adverbs, *e.g.*, *ci-zi*, 'twice', *esl-z*, 'thrice', *θun-z*, *θun-e-si*, "5 times", *cezp-z*, "7 times". The same formation reappears in Magyar, where we find the numeral adverb *sz-er* (*e.g.*, *egy-sz-er*, 'once', *ket-sz-er*, 'twice', etc.), an outcome of some ancient Turanian word meaning 'row' or 'order'.[5] Cf. the Turkic *syra*, Mongolic *sira*, 'row'.

Tesan, tezan.—Deecke considers *tesan* to be an Etruscan number-word equivalent to the Lat. *decem;* and Pauli, who appears to think that *nurθ* must be the only '10'-form used in Etruscan, subjects his friend's hypothesis to a most searching criticism, and purports to refute it by producing very strong evidence that *tesan* was used in the sense of 'dedicatio'.[6] I quite agree with him (1) that Etruscan not being an Aryan language, *tesan* is wholly unconnected with *decem;* and (2) that *tesan* is apparently used in several Inscriptions in the sense of 'dedicatio'. But, for all that, it by no means follows that *tesan* is not a '10'-word.

There is a widespread Turanian '10'-form in *t-s* and variants,[7] as follows:—

Finnic. —	*k-s-a-n*[8]	= *tsan*	= *t-a-s-a-n* (Schott)
	k-s-e-n	Etruscan. —	*t-e-s-a-n*
Esthonian. —	*k-s-a*		*t-e-z-a-n*
Mordvin. —	*k-s-o*	Zyrianian. —	*d-a-s*
	k-s-e	Magyar. —	*t-i-z*
Lapponic. —	*t-s-e*	Lithuanian. —	*t-i-s* (a loan-word)

[1] "Vulsiniis clavos indices numeri annorum fixos in templo Nortiae Etruscae deae comparere" (Livy, vii, 3). "Nursia Tusco" (Juvenal, *Sat.*, x, 74). The name Nur-*θ*, Lat. Nur-*s*-ia, affords a good illustration of the *θ-s* change (*vide sup.*, p. 396).

[2] *Vide* R. B. Jr., *The Myth of Kirkê*, 111; Sayce, *Assyrian Grammar*, Syl., No. 394: "*esa, sa*, fifteen, the goddess Istar".

[3] Gamurrini, No. 740.

[4] Fabretti, No. 2339.

[5] *Vide* Schott, *Das Zahlwort*, 26.

[6] *Vide* Pauli, *Die etruskischen Zahlwörter*, 31-6.

[7] *Vide* Schott, *Das Zahlwort*, 16.

[8] *Vide sup.*, p. 399.

Tcheremiss.—	*ch-s-e*	Five non-Aryan dialects of India	*d-a-s*[1]
Basque. —	*t-z-i*	Turkic. —	*o-t-u-z* (3 × 10 = 30)
Circassian. —	*t-z-e-y*	Yakute. —	*o-t-u-s* (3 × 10 = 30)

I have already noticed the Finnic *ksan* and several other immediately allied forms, when illustrating the formation of '8' by subtraction. The Eskuara (Basque) form *tzi* is very interesting, especially since Basque, like Etruscan, has frequently been regarded as *sui generis*. The connection of the Basque '7'-form, *zazpi*, with the Et. *cezpa* has already been illustrated, and the *tzi*-form occurs just where we should expect it, namely, in '8' and '9':—

8. *Zortzi* = *zort* + *tzi*, = "2 from 10", = 8.

9. *Bederatzi* = *bedera* ('1') + *tzi*, = "1 from 10", = 9.

The Arintzi *schau* has already been fully noticed.[2] Some have supposed the Zyrianian *das* to be an Aryan loan-word, borrowed from the Russian, and hence have been naturally compelled to suggest that the Magyar *tiz* was also a loan-word. There is no reason to suppose anything of the kind; the Turanians were quite able to provide themselves with '10'-words without applying to their neighbours, and I think the above list shows conclusively enough that they did so. On the other hand, in Lithuanian, the "language spoken by the least progressive member of European Aryans", and exposed to contact with non-Aryan races, we find, indeed, a true Aryan '10'-form—*deszim-t* with a final *t* (= Sanskrit *dasan*, Gk. δέκα, Lat. *decem*, etc.), and a singular second form *deszim-tis* (a combination of 'tens'?) recalling the Magyar *tiz*. Prof. Skeat remarks that the Lithuanian form for a 'thousand', *tukstan-tis* (100 × 10?), is not "at all easy to account for"; and, hence, it is far more reasonable to conclude that any borrowing has been on the Aryan side. And this view is further much strengthened by a consideration of the '11'-form in Lithuanian. The usual Aryan 'elevens' are perfectly regular and simple. *e.g.*, Sk. *ekadasan* (1 + 10), Gr. ἕνδεκα, Lat. *undecim*, Lettic *ween-pa-zmit* (= *weens*, '1', + *deszmit*, '10'); but the Lith. 'eleven' is *wiens-lika*, where we are surprised to meet the Etruscan and Turanian '10'-form *l*/χ, next to be considered.

Lastly, I have to deal with Pauli's view that the Et. *tesan* = 'dedicatio', and the deductions to be drawn from this circumstance. That *tesan* at times = 'dedicatio' I quite agree. Special circum-

[1] *Vide* Hunter, *The Non-Aryan Languages of India and High Asia*, 42.

[2] *Vide sup.*, p. 385.

stances having evolved a special '10'-word, *nurθ*, the ordinary '10'-word receives in time another and a secondary sense, but one which makes its primary meaning remarkably clear. That which is dedicated is primarily the tenth, the tithe. So, after the defeat of Xerxes, the Greeks dedicated a tenth of the spoil, and with it was made the golden tripod at Delphoi.[1] So, the Athenians dedicated the tenth part of the ransom-money obtained from Boiôtians and others to Athena, and made with it a brazen chariot drawn by four steeds.[2] In like manner the Siphnians sent the Delphic Apollo the tithe of their gold mines.[3] The tithe of Arês with respect to war-spoils is referred to by Lucian[4]; and, lastly, to take an Italian instance, we read in Livy, "Tibi [sc. Pythico Apollini] hinc decumam partem praedae voveo." Hence, there is no difficulty in understanding, with Pauli, such an Inscription as *Tezan te ta tular*[5] to mean "eine dedicatio statuta (sc. est) hic cippus", *tezan* being a pious offering, literally a 'tithe'.

Lχ. *Leχa, liχa.*—We now come to the most prominent of Etruscan '10'-forms, the one which appears in five of the decades. Allied forms are:—

Etruscan. —	*l-e-χ-a*	
Lithuanian. —	*l-i-k-a* (*vide sup.*)	
Lapponic. —	*l-o-kk-e*	
	l-o-g-e	
Vogul. —	*l-a-g-a*	
	l-a-v-a	
	l-o-u	
	l-a-u	(*e.g.*, *sat-lau*, '70').
Tcheremiss. —	(kok-)*l-a*	= 2 × 10 = 20.
	(kum-)*l-u*	= 3 × 10 = 30.
	(vif-)*l-e*	= 5 × 10 = 50.
Turkic. —	(el-)*l-i*	= *al-lig*, = 5 × 10 = 50.
Tshuwash. —	(al-)*l-a*	= 5 × 10 = 50.

The abraded forms are identical in Tcheremiss and Tshuwash. So, in Kamacintzi the '10'-form *tung*, changed to *tugu*, is abraded to *tu*.[6] The Eastern forms in this list prove that the Lapponic word is not borrowed from the Lithuanian.

[1] Diodoros, xi, 33.
[2] Hêrodotos, v, 77; cf. Pausanias, I, xxviii, 2.
[3] Ibid., x, xi, 1.
[4] *Peri Orchêseôs*, 21.
[5] Fabretti, No. 1910.
[6] *Vide sup.*, p. 385.

θRUM.—This is the second of the two principal Etruscan '10'-forms, and appears in three of the decades. Allied forms are:—

Etruscan. —	*-θ-r-u-m*	
Yenissei. —	(sai)-*θ-j-u-n*[1]	= 4 × 10 = 40, Et. ZAθRUM.
Ariner (A.D. 1735). —	*θ-j-u-ng*	
Mantchu. —	*d-ch-ou-an*	
Yakute. —	*d-j-ea-n*	
	uo-n	
Japanese. —	*d-j-iu*	
Kamacintzi. } Arintzi. } —	*t—u-ng*	
Kamacintzi. —	*t—u*	
Ostiak.—	*j-eu-ng*	
	j-a-ng	
	j-o-ng	
Jurak-Samoied. —	*i-u*	
Mongol. —	*γ-a-ng*	
	z-iu-n	
Tunguse. —	*z-a-n*	
Turkic. Koibal. Karagass. } —	*o-n*	

Mezza. The remaining Etruscan '10'-form, found in the compound *cine-mezza-θrum*, '80', as already noticed,[2] originally represented two distinct '10'-words, the sense of which passed over to the combination. I further remarked that they might be, and have been transposed without affecting the meaning: *za-mez*, as well as *mez-za*, = 10 + 10. Though when *mezza* became one word, the two tens were also fused into one, yet various traces of the original signification, *i.e.*, 10 + 10, = 20, remain. Thus the Yakute '20' is *syr-bae*, = *sur-ma* (= Ar. *schau-min*); the Turkic '20' is *yigirmi*, = *yir-mi*; the Lamuti '20' is *gur-mer*, "mit *r* statt *n*".[3] Another variant of *mezza* is the Ariner *man-tschau* (cf. the Mantchu *schy* Chinese *shih*, '10'), but examples of the reversed form (*za-mez*, *schau-min*) are more common. Such are the

Finnic. —	*ky-m-men-en*
	kje—men
Esthonian. —	*ku-m-me*

[1] This comparison was first made by Canon Taylor (*On the Etruscan Language*, 13).

[2] *Vide sup.*, p. 385.

[3] Schott, *Das Zahlwort*, 20.

Mokscha. —	*ke—men*	
Ersa. —	*ka—men*	
	ga—men	
	ka-m	(*kam-väike*, 10 + 1)
	ka	(*ka-vate*, 10 + 5)
Zyrianian. —	*ja—mys*	
Basque. —	*ha—mar*	(Cf. the Lamuti *mer*)

Such, then, are the '10'-forms, and I need not further remark on the extraordinary way in which the Etruscan forms, except the speciality *nurθ*, harmonise with, illustrate, and are, in turn, illustrated by the forms in the various other dialects. Languages are often capricious in their use of '10'-forms; a dialect will employ several, and frequently not in regular order; one word may be used for '10' itself, and another or others for '10' in compounds.

The numerals 11-19.—As it is not my intention in this paper to advance beyond the region of what I may call comparative certitude, I shall not offer detailed remarks upon the proposed forms 11-14, 16-18; they are suggested by analogy, but we can never be wiser than our facts. Such an Etruscan form as **tesmaχ* or **tesan-maχ*, "10 + 1", might easily pass into **tez-an-aχ*, and so would exactly correspond with the Magyar *tiz-ën-egy*, "10 + 1", = 11. But further considerations on these particular numerals I leave for the present, as also reference to two other Etruscan words which appear to me to be numerals, and to mean '10' and '11' respectively.

Teθu. 'Fifteen'? By analogy *tesan-θun*, *tes-θu*, *teθu*, might well be the Etruscan for '15'. We find an Etruscan oracle-goddess, whom Plutarch[1] calls Τηθύς, and whose name appears on the *Templum*[2] of Piacenza in the form Teθvm. As Deecke observes,[3] she is unconnected with the Greek sea-goddess; and may, like Istar, be a "goddess Fifteen",[4] of a lunar and prophetic nature, like Kirkê, Inô, and other moon-goddesses.

Tesamsa. 'Nineteen'? The meaning of this Etruscan word is uncertain, but its form most curiously agrees with what would be a very probable Etruscan '19', TE(*san*)-SAM(*ez*)ZA,[5] = 10 + (1 from 10) = 19. It occurs[6] in an untranslated inscription on the lid of a sarcophagus, and there is no reason why it should not be a numeral. Deecke sees in it a '10'-word.

[1] *Romulus*, ii.
[2] "That curious instrument of ancient Etruscan augury" (Sayce).
[3] *Etruskische Forschungen*, iv, 42.
[4] *Vide sup.*, p. 400.
[5] *Vide sup.*, p. 399.
[6] Fabretti, No. 2335.

VII.

The Decades.—Two '10'-forms Lχ (*leχa*) and θRUM are found as the usual terminations of the decades, just as in the Zyrianian decades we meet with two distinct '10'-forms *jamys* and *das*. There were, as of course, various dialects in Etruscan, although at present we are not in a position to say much about them.

**χimθrum*. = 2 × 10 = 20.[1]

CEALχ, CELχ. = CI + Lχ, = 2 × 10 = 20. Unabbreviated form *cealeχa*, = *ce-a-leχa*. *Ce* = *ci*, '2'; *a* is the "binding vowel", and is omitted in CELχ, = CEALEχA. The Inscription-forms in *-l*, quoted opposite the various numbers, *e.g.*, *cealχl-s* (= *cealeχal-s*), are Genitives, *-l* being a Genitive ending with the Genitival-Possessive signification 'of', "belonging to",[2] *e.g.*, *lupu avils esals cezpalχals*, "died of year third seventieth", *i.e.*, "aged 73".

MUVALχ, MEALχ. = $\left\{\begin{matrix} mu \\ me \end{matrix}\right\}$-$\left\{\begin{matrix} va \\ a \end{matrix}\right\}$-*le$\chi$a*, = 3 × 10, = 30.—This is quite the most difficult of the decade-forms, and if I refer to the opinions, and, as I regard them, the mistakes, of my predecessors in the investigation, it is not with any feeling of triumph over them, for I am deeply indebted to them all; but because, in this instance particularly, these mistakes were unavoidable from the standpoints of the several writers, and are in themselves very instructive, inasmuch as they show how on such lines it was absolutely impossible to arrive at a correct solution of the problem.

Canon Taylor explained *me-alχl* as *maχ-alχl*, and *-alχl* as '20', *mealχl* being thus "one score". But the Etruscan '20' is not so regarded, being 2 × 10; there is no reason to suppose that *me* is an abraded form of *maχ*; and *-alχl* is not '20', but is composed of *a*, the binding vowel, *lχ* (*leχa*), '10', and *l*, a Genitive termination. *Mu-v-alχl* he explained as "one score and ten" or '30', but he arrived at this correct conclusion by taking *v* for '10' and *-alχl* for '20', as before. He apparently regarded *mu* as a variant of *me*.

Both Deecke and Pauli clearly see that *muva* and *mea* are variants and mean the same number.[3] Deecke formerly thought

[1] *Vide sup.*, p. 384.

[2] *Vide* Sayce, in Pauli's *Altitalische Studien*, ii, 127-8. I have treated of the Genitive-ending in *-al* at length in *The Etruscan Inscriptions of Lemnos*, Part ii.

[3] "*Muv-* (*mev-*)" (Deecke, *Etruskische Forschungen und Studien*, ii, 36, note 128); "*Muv-* oder *mev-* (Pauli, *Die et. Zahlwörter*, 35).

that *muvalχls* and *mealχls* were Genitive forms, meaning '30', which is the fact; but he arrived at this conclusion by supposing *maχ* to mean '3', and connecting it with *mea-*,[1] as Canon Taylor did. He has now altered his opinion, and whilst rightly holding *maχ* to mean '1', supposes that *muv-* and *mev-* mean '9', and would fain connect them with the Lat. *novem*, an attempt which Pauli refutes.

Pauli saw clearly that the word is not one of the dice-numerals, and incorrectly assuming that the decades up to 60 *must* be formed from the dice-numerals, has combined the two forms *me* and *mu* in the imaginary word *meu*, to which he assigns the meaning '7'.

Ellis, wrong throughout, and for reasons which it is unnecessary to consider, makes *me-alχl* to mean '20', and *muv-alχl*, '40'.[2]

In deciding the question the following points should be borne in mind:—(1). In numerals the forms 2-9 by no means universally reappear in the decades 20-90. (2). The dice-forms clearly supply the decade-forms 20, 40, and 50; the forms 70, 80, and 90 are, as we have seen, clearly from other sources. The form for 60 is unknown, but it would probably be formed from the dice-numeral *huθ*, '6', as 40 and 50 are formed from the dice-numerals *sa* and *θu*; whilst the Arintzi form *ui-tung* (6 × 10 = 60) makes it all but certain that the Et. 60 must have been *huθrum*. There is no reason whatever to suppose that *muvalχ* and *mealχ* mean '60'. (3). The Arintzi, Kottic, and Yenissei forms of '40' make it absolutely clear that the Et. *za-θrum* (4 × 10) = 40, and is not, as some have supposed, an abbreviation of *zal-θrum*, and thus derived from *zal*, '3'. Hence, as in Etruscan *l* is at times elided, *e.g.*, *vesu* = *ve-l-su*, there was a positive reason for not employing the form *zal* in the decades, *i.e.*, in order to avoid confusion between *za-l* and *sa*, *za*. All these considerations point most strongly to '30' as the meaning of *muvalχ*.

At this stage in the investigation let us turn to linguistic comparison. As noticed[3] there are two distinct '3'-forms in Akkadian, one of which is connected with the Et. *zal*.[4] The other, *u-mu-s* and variants, is based on the idea of plurality, and connected with the Ak. plural-sign *mes*, *mis*, 'many'; for as 'two' gives the gram-

[1] Deecke, *Die Etruskischen Zahlwörter*, 272-3.

[2] *Sources of the Etruscan and Basque Languages*, 18. In a previous work (*Peruvia Scythica*, 179), he explained '*me-a-lchls*' and '*muv-alchls*' as" 'tenth's', or 1 × 10."

[3] *Vide sup.*, p. 381.

[4] *Vide sup.*, p. 394.

matical idea of the dual, which is probably older than the plural, just as 'two' comes before 'three', so 'three' supplies a ready and easy idea of the plural, *i.e.*, that which is more than 'two'. Thus, as noticed, "the Puris of South America call 'three' *prica* or 'many'".[1] Some of these '3'-forms are as follows:—

Akkadian. —	*-uv-u-s*	(*V*, *m*, and *b* are thus interchangeable)
	u-m-u-s	
	v-i-s	
	b-i-s	
	i-s	
Karagass. —	*u—i-s*	
Koibal. —	*u-s*	
Yakute. —	*y-s*	
Turkic. —	*ü-c̈*	
	u-tch	

Besides these direct numeral-words there are, scattered through the Turanian languages, a number of allied forms meaning 'heap', 'multitude', 'people', 'all', 'handful', 'copious', and similar significations, all connected with the idea of plurality and numbers. Such is the Turko-Tatar form *bu-t*, 'heap', 'multitude', etc., whence the Tunguse *bu-tu*, 'handful', the Karagass *bu-tura*, and Buriat *bu-teng*, 'all', the Uigur *bu-tun*, 'people', the Altaic *pu-dun*, 'all'. Such also is the Magyar *bo*, *bov*, *bev*, 'copious', *bov-en*, 'abundantly', which reappears in the Lapponic *ma-l-ked*, 'satis multum', the Finnic *pyy-lea*, and other allied forms. This same widely-spread form makes yet another and a very remarkable appearance, namely, in certain high number-words, *e.g.*,—

Buriat. —	*m-e-a-ngan*	= '1,000.' Cf. the Tibetan *mang*, 'much'.
Koibal. —	*m-u—ng*	
Tungusic. —	*m-i—ngan*	
Kamassin. —	*m-i—ng*	
Turkic. —	*b-i—m*	
	b-i—n	

In the light of these forms we have, therefore, no difficulty in restoring a second Etruscan '3'-form, preserved in this decade, *i.e.*, *u-*{*mus*, *mes*}, the *u* of which has disappeared, as in most of the other

[1] Sayce, *Principles of Comparative Philology*, 274. Tylor quotes the nursery rhyme, "Three's a many" (*Primitive Culture*, i, 240).

dialects.[1] Thus, *muval*χ = *muvale*χa, = an original *u-mu-s-va le*χa; *meal*χ = *meale*χa, = an original *u-mes-a-le*χa. The Buriat and Koibal forms for '1000' have preserved exactly the variants *me-a* and *mu*. We therefore, from every point of view, arrive at the conclusion that *muval*χ and *meal*χ = 30.

With the Etruscan enclitic conjunction *va, ua, a*, compare the Akkadian *va, ua*, 'and', the Kamassin *wa*, the Tungusic *wa-l, ma-l*, the Ostiak *me-t*, "with it", the Magyar *me-g*, 'and'. Example:—*zilc-marunu*χ*-va*,[2] "magistrate procurator-and", *i.e.*, "(was) magistrate and procurator".

ZAθRUM. = SA + θRUM, = 4 × 10 = 40.[3]

**θunχulθ*. = *θun* + χu + *le*χa, = 5 × 10, = 50. Pauli[4] conjectures that the Et. *θunχulθl* is a numeral, and has much to say about it, but does not explain it. In Etruscan χ at times = θ, *e.g.*, *me-*χ*-l* = *me-θ-l*, and this apparently uncouth form is simply *θun-*χu*-l*χ*-l*, a Genitive.

The copulative particle χu (*cu*) in *θun-*χu*-lθ* is not the Latin loan-word *qu-e*, Et. χ, *c*, which in Etruscan as in Latin is appended to a word; but originates from the Et. *ci*, '2', meaning primarily "the other (second) hand", then, generally, 'another', and lastly, '+' or '×', as the case may be. It is exactly illustrated by the Ostiak *ja-xat-jong*, "1 + 10", = 11. Here *xa-t* originates from the Ostiak *ka-t*, Ak. *ka-s*, Et. *ci, ci-n*, '2'; and, as Castrén suggests, *ja-xat-jong* might mean, in the original notation-scheme, "1 of the 2nd 10", = 11, but for many centuries *xat* has simply meant '+'.

**huθrum*. = HUθ + θRUM, = 6 × 10, = 60.—The Arintzi form *ui-tung* makes it almost certain that this must have been the Etruscan '60'.[5]

ESLEMZAθRUM. = *esal-e-mezza-θrum*, = (10 − 3) × 10, = 70.[6] In this decade we possess both *θrum-* and *le*χa-forms, showing that probably there was a complete series of each. Cf. *Eslemzaθrumis* [*ce*] = '70th'.

CEZPALχ. = *cezpa-le*χa, = 7 × 10 = 70. *Vide* 'Seven'.

CIEMZAθRM. = *cine-mezza-θrum* = (10 − 2) × 10 = 80.[7]—The word *ciemzaθrms* occurs in an Inscription on a sarcophagus which

[1] Cf. the Et. *e-sal, zal; e-cn, cen.*
[2] Fabretti, No. 2056.
[3] *Vide sup.*, pp. 385, 403.
[4] *Die et. Zahlwörter*, 129.
[5] *Vide sup.*, pp. 385, 403.
[6] *Vide sup.*, p. 389; R. B. Jr., in *The Academy*, Dec. 1, 1888, p. 358.
[7] *Vide sup.*, pp. 386, 398.

bears "la figura di un uomo vecchio". The Inscription is as follows:—

larθ: χurχles: arnθal χurχles: θanχvilusc cracial
Lars Churchle, of-Aruns Churchle and-of-Tanaquil Craci

clan: avils: CIEMZAθRMS: *lupu*
son, of-year eightieth died.

The *c* in *θanχvilus-c* = Lat. *que*. The Genitive ending in *-al*[1] (*arnθ-al, craci-al*) will be noticed. *Clan*, the Osmanli *ogul, oglan, oghlan*, 'boy' (literally 'sprout'), is rendered in a bilingual Inscription[2] by the Latin *filius*. "Of year eightieth" = "aged 80".

SEMφALχ. = *semφa-leχa*, = 9 × 10, = 90. *Vide* 'Nine' and 'Nineteen'.—The numbers 21-9, 31-9, 41-9, 51-9, 61-9, 71-9, 81-9, and 91-9 require no special remark. It will be observed that, in accordance with the Inscriptions, the decade is placed last, on the principle 1 + 20, etc.

**Vuiθ*. "A hundred". = 10 × 10 = 100.—We meet with a word *versus* or *vorsus*, meaning "one hundred feet square", of which it is said, "Primum agri modulum fecerunt quatuor limitibus clausum figurae, quadratae similem, plerumque centum pedum in utraque parte, quod Graci πλέθρον appellant, Tusci et Umbri *vorsum*."[3] The form *vor-s-us* suggests an Etruscan original *vur-θ*; *vurθs* would = '100th', and *vurθzi*,[4] "100 times", hence *vorsus* (= *vorθsus*) = 100 times (a foot), and also, like πλέθρον, 100 × 100 = 10,000 (square feet). It may be tempting, at first sight, to connect such a form as *vur*, '100', with the Jurak-Samoied *jur*, etc.[5] But an Etruscan *v* does not, I think, represent *j*; and we should rather look for the origin of *vurθ* in the '10'-word *mezza*, as *vezza—vurs—vurθ* (= 10 × 10). In Etruscan *s* at times = *r*, *e.g.*, *E-s-us, E-r-us*, and *zz* becomes *rz*.[6]

The Ordinals.—As *-s, -si, -sa, -ssa* are Etruscan Genitive-endings, it has often been assumed that the final *s* which appears in the numeral-forms in the Inscriptions (*e.g.*, *esal-s cezpalχal-s, maχ-s, semφalχl-s*, etc.) is merely a sign of the Genitive case. But this is not so. As before stated,[7] it is the *l* which marks the Genitive here; and to Canon Taylor belongs the merit of first perceiving that the *s* represents the ordinal termination.[8] Two examples show another letter; in Fabretti, No. 2340, we read, *avils*

[1] *Vide sup.*, p. 405. [2] Fabretti, No. 460.
[3] Fragm. *De Limitibus*, p. 216, ed. Gæs.; *vide* Fabretti, *Glossarium Italicum*, 2004.
[4] Cf. *cizi, θunz, cezpz, nurθz, nurθzi*. [5] *Vide sup.*, p. 386.
[6] *Vide* R. B. Jr., *The Etruscan Inscriptions of Lemnos*, 353.
[7] *Sup.*, p. 386. [8] *Etruscan Researches*, 179.

[*m*]*aχs mealχl-sc.* Deecke, contrary to the evident sense of the Inscription, and unsupported by a single similar numerical example, has suggested that the *c* here = *que,* which, as noticed, is at times the meaning of *c* final. Canon Taylor well observes, "This is a valuable instance, as it doubtless presents a more archaic form of the suffix [than the single letter *-s*]. The final *k* [*c*] might easily be extruded, but it could not have been intruded. Now in Karagass Tatar we find this precise form, the ordinal suffix being either *-ske* or *-eske.*"[1] We also meet with such Turanian ordinal-forms as the Tungusic *-ki, -tku,* the Buriat *-d-eki,* the Votiac *-eti,* the Magyar *-edi-k, -odi-k,* the Kottic *-s,* the Mordvin *-tse,* the Mantchu *-tsi, -ci,* the Akkadian *-ka-m,* etc. But none of these forms, all or nearly all of which are almost certainly connected in origin, better illustrate the process by which an *s* may be left alone at the end of an ordinal, than the Finnic.

The Turkic ordinal termination *-ndi* (cf. Turkic *iki-ndi,* 'second') reappears in Suomi (Finnic) as *-nt, e.g., nelja-nte,* '4th', and before *i* the *t* becomes *s,* so that we have the forms[2]:—

nelja — n-t-e
nelja — n-s-i
nelja —— s-i
nelja —— s
} = '4th'.

So, we have *kaksi,* '2', *kahde-nsi, kahde-s,* '2nd', *kolme,* '3', *kolma-nsi, kolma-s,* '3rd'. We can, therefore, easily restore the apparently perplexing Etruscan form as :—

ME-A-LEχA-L-ISCE
(3 × 10) + Genitive-sign + ordinal-ending
} = "of-30th".

The other Etruscan example is *zaθrmisc* (= *zaθrumisce*), = '40th', from which we see that the unabbreviated Etruscan ordinal was *-isce.*

There are many other points and questions connected alike with the study of Etruscan generally and with the numerals in particular, upon which I do not enter here. I make no pretensions to exclaim, like one of the workers in the field of Etruscology,— "Etruria Capta!" These remarks are merely preliminary and undogmatic, and are submitted to the judgment of experts and students. The Etruscan riddle, that most perplexing problem in linguistics, will be solved in time, and I trust that the evidence which I have collected will not be without its value, but the end is not yet.

[1] Or *-iske.* It is rather singular that in Koibal, the immediately connected dialect, *eske, iske,* means a 'rudder', or that which enables us to keep our proper course, line, or row (*ordo*). [2] *Vide* Schott, *Das Zahlwort,* 24.

ROBT. BROWN, JUN.

NOTES FROM PARLIAMENTARY PAPERS.

No. 8.

Report of the Special Commission for 1887 on British New Guinea.

(Continued from p. 283.)

"THE Motu people were disgusted when they saw it, and said, 'Is this what we have been paying our best arm shells and tomahawks for, for so many years?' It produced rain and abundant crops, and had had very many presents made it for many generations. In the morning of the next day the old sorcerer came to Chalmers, the spirit had appeared to him while he slept, and was very angry, and put two more stones on his chest, and told him to bury them again. Mr. Chalmers upon this took those two stones, too, and told him if the spirit appeared again that he was to say that he wished to have nothing more to do with him. The old man said that some great piece of bad luck was sure to happen to his tribe, and was not at all pleased. He then tried to get some pity, but they were all glad to see so great a tax as this had been to them removed. Mr. Chalmers had not expected to find anything at all there in the ground."

It was probably the case in this instance that the sorcerer himself did not know what was buried in the ground, and as this was a very old spirit, and had become a sort of heirloom in his family, he probably believed in it as much as any of his dupes.

The tribes whose head-quarters are at Port Moresby have come so much under the influence of the London Missionary Society that they are discarding to a great extent their superstition. In any other tribe so great a sacrilege as digging up a spirit all powerful for producing rain and crops would not have been permitted. But even these people, the most civilised in New Guinea, and most of them professed Christians, in times of great excitement revert to their old habits. This was shown during the autumn of 1886. At that time a severe epidemic raged along the south coast. The people were dying in hundreds of pneumonia, and were beside themselves with fear. The usual remedies for driving away spirits at night were tried, remedies which had

been in disuse for years--torches were burnt, horns were blown, and the hereditary sorcerers sat up all night cursing, but still the people died. Then it was decided that the land spirits were working this harm, and the whole population moved their canoes out in the bay and slept in them at night, but still the people died. Then they returned to their village and fired arrows at any moving object they saw, so that many native dogs came to an untimely end.

Mr. Lawes, junior, who had to pass through the village every night at about 10 p.m., was begged by the natives always to wear white clothes so that they might know it was not a spirit.

If he had failed to do this he might possibly have been shot by mistake. It will be observed by this that the native ghost is black.

In course of time the epidemic wore itself out, but while it lasted the civilised Motuans were as superstitious as any of their neighbours could have been. It sometimes happens that a sorcerer makes use of his power for his own evil ends, and then the sacred character of his office proves to be insufficient to protect him. This is not often the case, as he is usually a rich man and can afford any extravagance in moderation. A case, however, came under my notice at a place called Keite on the south coast.

The extract from my journal is as follows:—"Last night a child in the village died, and a horrid howling and drumming was kept up in consequence for the benefit of her departed spirit. I heard yesterday that a sorcerer was killed for committing adultery. It seems that he used his power for this purpose. He said he could make all the women barren, and kill them too, if he chose; and so the outraged husbands saw if they could kill him, and succeeded." As I have said before, these cases are uncommon, as the sorcerer with all his imposture generally recognises in his own mind the fact that he is an imposition, and in his prophecies he takes very good care that there should be a loophole for escape in the not improbable event of his predictions not being fulfilled. One curious feature in connection with them is the sale and issue of charms. These charms are not modelled on any fixed principle, but depend entirely on the fancy of their designer. They are considered sufficiently valuable to be a source of great profit to the maker, but I have never found any difficulty in buying them from natives. I suppose they are easily renewed. The natives do not of their own accord show them to you or offer them for sale, but nearly every man carries a netted bag on his shoulder, and if you

take the trouble to examine this, after extracting a heterogeneous mixture of old match-boxes, clay pipes, odds and ends of all sorts, you will find the charms at the bottom. Sometimes there will be a dozen of them, from the bit of bark with a few threads of sinnet round it—a cheap charm, I should think—to the beautifully worked little crab-claws arranged in every fantastic design, no two are found precisely similar. Some are intended to ensure safety against shipwreck; others against spear wounds; others, again, provide a complete immunity against accidents of all sorts; in fact, there is no end to them. The sorcerer might almost occupy the position held by the more civilised insurance company, with even greater profits, for while he issues policies of insurance in the form of crabs' claws and pieces of bark, he incurs no responsibility except in possible loss of credit and the chance of some angry creditor taking the law into his own hands. One attribute he possesses must not be lost sight of, he is doctor and surgeon as well as sorcerer. His surgery is of an elementary character. It is always supposed that if a man is suffering pain from any cause whatever that it can be let out by making a long incision over the abdomen. It is obvious that this cannot be a very safe remedy, as the incision is not infrequently sufficiently deep to cause death in itself. Some time ago I saw a woman, the wife of a native teacher, who had been badly speared during an attack on the teacher's boat. She was the only survivor of the party. Although her wounds were severe, by far the worst one she had had been inflicted by the hand of a native doctor in the form of a long and much too deep cut over the abdomen. The superstitions of the Papuans can hardly be said to resemble any form of religion. As far as I know, all their spirits are malignant ones, which have to be overcome either by hand, cursing, or propitiatory offerings.

It seems entirely foreign to the native mind ever to have conceived an idea of a beneficent spirit. In the characters they ascribe to their spirits they unconsciously reproduce their own natures: he employs the same treacherous artifices, and has to be overcome by the same cunning which they would employ with their earthly neighbours: in fact, they are illogical to a degree in speaking of them. They believe them to be intangible and supernatural, and yet assert that they can kill them with arrows or spears. They are intensely frightened of them, and yet do not hesitate to employ language to them which no spirit with any self-respect could tolerate for a moment.

Fire is the great purifier and the terror of spirits, but while they

admit that they can drive them away with bonfires and torches, they do not seem to have any spirit of the fire, possibly because he would almost assume a beneficent appearance in ridding them of the others. Hereditary spirits which afflict whole tribes from generation to generation seem to be not uncommon, but as a general rule each man creates his own for himself, and there is no law restricting the number an individual is allowed to have.

Conscience, I think, troubles them but little, and a man is seldom haunted by the recollection of former misdeeds.

The fact of a man having some near relation's skull exposed in a conspicuous position opposite his front door would cause him no pangs of regret, nor is it likely that his defunct relative's shade would ever reproach him with having annexed his head in a somewhat arbitrary manner.

Conscience with them implies no loss of self-respect, but merely the fear of retaliation and personal danger to themselves. One way in which sorcerers occasionally come to grief is not very uncommon. This is when a tribe possesses two rival sorcerers.

They will try every artifice to secure each to himself the greatest custom, and will undersell each other to attain this object. At length one of them oversteps the limits of prudence and prepares some extra potent charm—a love-charm, probably, which recoils upon his own head, as he probably, at some not very remote period has to deal in an unpleasant manner with injured husbands or fathers. There must be some form of understanding, however, between rival sorcerers or they could never preserve the secrets of their trade, and those once gone, so would their occupation be likewise.

They have their familiars or spirits, who belong to themselves alone. On more than one occasion I have heard the sorcerer speaking to his familiar in a little squeaky voice. The familiar, and indeed all spirits, when they speak, appear to imitate the squeaky voice of some small animal and are answered in the same manner. During voyages the canoes will stop at certain localities, and a great drumming, burning of torches, and cursing will go on, to either frighten or drive away the local spirit. As a general rule, before the canoe resumes its journey some member of the crew will assert that he saw the hostile spirit fly away in the form of a flying fox, or some other nightly animal.

Even amongst members of the same tribe a man may compass the death of another by paying the sorcerer to slowly kill him The methods employed are much the same, I fancy, in every

savage community in the world. If the cuttings of the victim's hair can be obtained and are buried, he will surely die; but every man takes care to destroy for himself such dangerous things as these.

In default of this, the refuse of his meals buried in the ground will have a most unwholesome effect; some kind friends will be sure to tell him of the secret influence at work against him, and unless he buys off the sorcerer, or takes the law into his own hands, a thing he hardly dare do in his own tribe, he will in course of time be so worked on by his feelings that he will undoubtedly die.

The sorcerer seems to be quite impartial as to who it is upon whom he brings his power to bear. He requires payment, but having received this, he goes to work quite as cheerfully on one of his own tribe as upon a stranger. With him it is purely a matter of business. When the rest of his tribe are fighting, he is very often excused from taking part in the fray, as it is considered he is of more use at home than he would be in the field. Besides, by the time his reputation is secure he is usually a very old man, and would not be of much use in active warfare. They combine a certain amount of astronomy with their other pursuits, but they are not nearly such keen observers of the stars as the Fijians or Solomon Islanders. Of course, as they have to produce fine weather or rain at will, it is not unnatural that they should study the signs of the weather closely. The great difficulty in the way of writing accurately about native superstitions is the disinclination on the men's part to talk of them. They have a scared look on their faces, and the information has to be dragged out of them bit by bit. If they should fancy they are ill after a conversation of this sort, which they very probably will, they are sure to lay the blame at the door of the inquisitive white man. It has been a common enough plan for white traders to gain their ends by working on native superstition and frightening them into doing work they would have preferred not to do. Occasionally, no doubt, it might be useful, but as a rule I should say it was an unsafe proceeding.

When I was in New Ireland, in 1883, I might quite easily have performed the miracle of foretelling an eclipse of the sun. I had with me a nautical almanack with a map of the eclipse, and by this I saw that the northern end of New Ireland was on the line of partial contact. It would have been a dangerous experiment to try, and, besides, I could not have produced a total eclipse.

The native mind is very susceptible to ridicule, and if I once laughed at a man whom I had persuaded to confide in me, farewell to any chance of getting any more information out of him. The best plan is to listen to the men talking to themselves round a camp fire, under which circumstances they speak quite openly upon all sorts of sacred subjects. I heard not long ago that the people of a village in Milne Bay, who had been doing a good deal of work for a certain white man, had sworn, in consequence of several cases of illness in the village, to smoke no more white man's tobacco till they had procured a white man's head. They thought that a white man's devil was responsible for it, and that nothing but a head could frighten it away. I have never made up my mind whether anything of the nature of transmigration of souls is believed in. There was certainly a very large alligator at South Cape, which was known to the natives and called by the name of a defunct chief, but this in itself would be hardly sufficient to prove it. They seem to believe in something like the soul; but if the native soul is in the habit of entering into the lower animals, they must, as a rule, be small animals they patronise, as whenever they hold conversations with the living they speak in a small, whistling voice.

The habit, too, of drumming and burning torches on the death of a relative seems to imply that they are sending the departed soul safely off on its journey. In some of the Louisiade Group there are certain very large well-known trees under which they have their feasts. These trees appear to be credited with possessing souls, as a portion of the feast is set aside for them, and bones, both pigs' and human, are everywhere deeply embedded in their branches. It is certain that the souls of murdered men are constantly haunting their skulls. I had, a short time ago, two skulls, which I had demanded of the natives of Moresby Island, sent me. They had to pass throughout the whole length of two large islands before they reached me, and wherever they went they were supposed to have caused sickness and death. It is true that they had for some four months adorned the houses of the murderers without producing evil results, but when the white man insisted on having them they considered that the white spirits were constantly hovering round them and working destruction wherever they rested.

I have constantly seen a man's widows, for days after his death, lying on the top of his grave and keeping up a rapid conversation with him for hours at a time, till they stopped from exhaustion.

A man's soul after death will haunt the places to which he was most attached on earth. There seems to be one locality in which they all live, but there are certain localities in the bush which, for instance, a widow will know to be frequented by her husband's shade. When a man dies his friends often put food in the grave with him, so that wherever he may be going to he shall suffer no inconvenience from hunger. It is a matter of doubt whether any actual mythology exists.

At all times, in dealing with savage races, it is most difficult to decide where history ends and mythology commences. Native memories, especially Papuan memories, are short, and I should imagine one hundred years to be quite the limit of time from which any events of importance have been handed down as matters of history. I have made repeated inquiries on this subject, and have never been able to learn anything satisfactory. The actual history of some people—the Fijians, Forgans, Maoris, etc.—can be traced back nearly three hundred years; at least the chiefs can tell you who their ancestors were as far back as that. Here it is different. A man can perhaps tell you his great-grandfather's name, but further back than that he cannot go.

As regards their mythology, a man believes in the spirits his father believed in, and invents as many more for himself as he feels inclined. No one objects to his having as many as he pleases; it is only a matter of expense to himself, as he doubtless has to purchase a new charm whenever he invents a new devil.

The uninteresting commonplace stories of yam crops being destroyed by certain devils, and of shipwrecks and disasters of all sorts, are all very much alike, and are hardly worthy of being called a mythology, though, doubtless, the same stories have been told with very little variation from generation to generation.

I think it may be taken for granted, then, that they have no mythology of any interest, certainly none by which their actions of the present day are controlled. And after all it is only with the present day we have to do; no doubt, hundreds of years ago they were in every respect precisely the same as they are now, with the exception of their not having as yet acquired the passion for ornamenting their houses with that ethnological curiosity, a white man's head. In the South-eastern Archipelago dances are very rare, nor have I ever seen one. Such dances as they are, have been described to me as only performed after a feast. No superstitious importance is attached to them, and the details do not bear repetition.

But to the westward, in the Gulf of Papua, symbolical dances are constantly performed, and much superstitious importance surrounds them. Each man is dressed to represent some bird or fish, and the dresses they appear in are marvels of ingenuity and construction. The shark is a favourite symbol, as are also wild ducks and geese. No doubt each man in selecting his dress to dance in, is paying a tribute to the bird or fish in whose image he presents himself. The shark has ferocity and cunning ; the wild duck, swift flight and watchfulness ; the cassowary, strength and speed of foot. One could go on multiplying endless instances.

But the people of the Papuan Gulf are as distinct from the inhabitants of the South-eastern Islands as both races are to the people who dwell on the North-west Coast and in Jeilvink Bay. I will endeavour, from the fear of becoming tedious on the subject of sorcery and superstition, to sum briefly the result of my observations. It is so important a matter in all dealings with natives that it should always be taken into account in the formation of plans in which you are dependent upon them. The best laid schemes may, and often do, entirely collapse through some unforeseen and unreckoned-for piece of superstition. Sometimes, indeed, mere physical fear will be represented as superstitious disinclination to do the white man's bidding. It is impossible for the most experienced white man to follow correctly the native train of thought, but his face is usually a good index to his feelings. They will usually follow a gun or even a revolver anywhere, as they imagine the noise and flash frighten the spirits, while the bullet kills the man. I have often been asked to fire off a gun to frighten away spirits.

Superstition is a constant source of annoyance, for the native spirits are always in the way, and the white man's spirits are of very little practical use to him. It is too deeply planted in their natures to be got rid of even under the teaching and influence of the missionaries. It does occasionally, however, exert itself for good, as in the case already related of the boy who was saved by the petticoats of the women. It is so foreign to the ideas of white men, that it cannot be wondered at that they sometimes unintentionally offend native prejudices, and have to suffer the consequences of their inexperience. There is no doubt, if it could be eradicated from their minds, that all intercourse with them could be carried on in a much safer and more agreeable manner than it is at present.

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